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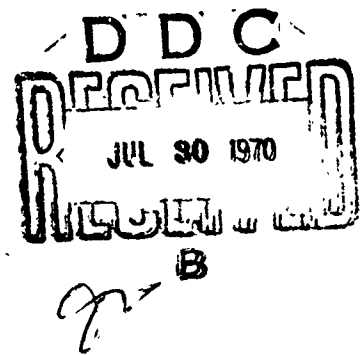
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**EXECUTIVE MANAGEMENT REQUIREMENTS  
ANALYSIS FOR THE  
INTEGRATED FACILITIES SYSTEM**

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PRC R-1209  
Volume X  
May 1970



Prepared for  
Department of the Army  
Deputy Chief of Staff for Logistics  
Director of Installations

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Executive Management Requirements Analysis  
for the  
Integrated Facilities System

PRC R-1209  
Volume X  
May 1970

Prepared for  
Department of the Army  
Deputy Chief of Staff for Logistics  
Director of Installations

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## FOREWORD

This is one in a series of Integrated Facilities System (IFS) documents, and a detailed discussion of background information is not contained herein. Rather, reference is made to the following IFS documents:

Planning Research Corporation, D-1506, Integrated Facilities System, August 1967.

Planning Research Corporation, D-1506, Integrated Facilities System, October 1967.

Planning Research Corporation, PRC R-1104, Program Definition for the Design and Development of an Integrated Facilities System (IFS), March 1968.

Planning Research Corporation, Technical Proposal B-68-08-471A, A Proposal for the Design and Development of an Integrated Facilities System (IFS), 30 September 1968.

Planning Research Corporation, Technical Proposal B-63-08-674A, Continued Development of the Integrated Facilities System (IFS)-Phase IIB, 8 October 1969.

Planning Research Corporation, PRC R-1209, Volume I, System Definition for the Integrated Facilities System, June 1969.

Planning Research Corporation, PRC R-1209, Volume II, Part 1, Real Property Maintenance Activities (RPMA) Management Function Analysis, June 1969.

Planning Research Corporation, PRC R-1209, Volume II, Part 2, RPMA Module Analysis for the Integrated Facilities System, December 1969.

Planning Research Corporation, PRC R-1209, Volume II, Part 3, RPMA Functional Design for the Integrated Facilities System (Draft), December 1969.

Planning Research Corporation, PRC R-1209, Volume III, Part 1, Facility Requirements Analysis for the Integrated Facilities System, March 1969.

Planning Research Corporation, PRC R-1209, Volume III, Part 2, Facility Planning Module Analysis and Design for the Integrated Facilities System, December 1969.

Planning Research Corporation, PRC R-1209, Volume IV, New Construction Module Analysis and Design for the Integrated Facilities System, December 1969.



Planning Research Corporation, PRC R-1209, Volume V, Assets Storage and Retrieval Module Analysis and Design for the Integrated Facilities System, November 1969.

Planning Research Corporation, PRC R-1209, Volume VI, Part 1, Facility Condition and Readiness Definition for the Integrated Facilities System, April 1969.

Planning Research Corporation, PRC R-1209, Volume VI, Part 2, Facility Condition Field Test and Impact Analysis for the Integrated Facilities System, September 1969.

Planning Research Corporation, PRC R-1209, Volume VII, ADP Analysis for the Integrated Facilities System, August 1969.

Planning Research Corporation, PRC R-1209, Volume VIII, Phase IIB Development Plan for the Integrated Facilities System, August 1969.

Planning Research Corporation, PRC R-1209, Volume IX, Economic Analysis of the CONUS Integrated Facilities System, April 1970.

The following Phase IIB documents will be published at a later date:

<u>R. No.</u>	<u>Vol.</u>	<u>Proposed Title</u>
1209	XI	Implementation Plan for the Integrated Facilities System
1209	XII	Facility Allowance Criteria for the Integrated Facilities System
1209	XIII	Detailed Functional System Requirements (DFSR) for the Integrated Facilities System
		<u>Part 1</u> Executive Summary
		<u>Part 2</u> Functional Management System Description
		<u>Part 3</u> Specifications for Automated System
		<u>Part 4</u> Appendixes

## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION . . . . .	I-1
A. Definition of Tasks . . . . .	I-1
1. Refinement of Phase IIA Executive Decision Survey Analysis . . . . .	I-1
2. Development of Analytical Procedures . . . . .	I-1
B. Technical Approach . . . . .	I-2
1. Information Gathering . . . . .	I-2
2. Compilation and Analysis of Information . . . . .	I-3
3. Development of Analytical Procedures . . . . .	I-3
C. Constraints . . . . .	I-4
D. Report Organization . . . . .	I-4
II. REFINEMENT OF PHASE IIA ANALYSIS OF EXECUTIVE INFORMATION REQUIREMENTS . . . . .	II-1
A. Identification of Specific Data Use Identifiers . . . . .	II-1
B. Definition of Voids To Be Filled by IFS . . . . .	II-3
1. General . . . . .	II-3
2. Criteria for Inclusion or Exclusion of DUI's . . . . .	II-3
III. ANALYSIS OF EXECUTIVE LEVEL NEEDS . . . . .	III-1
A. Background . . . . .	III-1
B. Analysis of Needs . . . . .	III-2
C. IFS Support of Executive Level Needs . . . . .	III-9
D. Recommendations . . . . .	III-16
1. Readiness . . . . .	III-16
2. Current Value . . . . .	III-17
3. Major Maintenance and Repair . . . . .	III-18
4. Facility Planning and Planning Factors . . . . .	III-19
IV. DEVELOPMENT OF ANALYTICAL PROCEDURES . . . . .	IV-1
A. General . . . . .	IV-1
B. Proposed Changes . . . . .	IV-2

TABLE OF CONTENTS  
(Continued)

	<u>Page</u>
1. Facility Readiness . . . . .	IV-3
2. Current Value of Improvements . . . . .	IV-3
3. Summary Planning Factors . . . . .	IV-3
4. Rapid Stationing Analysis . . . . .	IV-3
5. Essential Maintenance and Repair Requirements . . . . .	IV-4
C. Readiness and Use of Readiness Indices . . . . .	IV-4
D. Current Value of Improvements . . . . .	IV-9
E. Summary Planning Factors . . . . .	IV-13
F. Rapid Stationing Analysis . . . . .	IV-14
G. Work Backlog . . . . .	IV-15
APPENDIX A VISIT LIST . . . . .	A-1
APPENDIX B STANDARD EXECUTIVE LEVEL REPORTING REQUIREMENTS . . . . .	B-1
A. List of Directives, Instructions, and Forms Examined For Executive Level Interest in Facilities Information . . . . .	B-5
B. Executive DUI Requirements Plus Selected Additional Forms . . . . .	B-21
C. DUI's Not To Be Covered in the Phase IIB DFSR . . . . .	B-62
D. Selected Forms Containing DUI's Not Covered .	B-68
E. Executive Management Data Use Identifiers Obtained from JCS Documents . . . . .	B-87
F. Reporting Requirements Related to Directives Listed in Subsection A . . . . .	B-92
G. Forms Related to Documents Listed in Sub- section A But Not Analyzed for Conversion to Data Use Identifiers . . . . .	B-107
APPENDIX C ANALYTICAL METHODS . . . . .	C-1
A. Investment Costs to Provide Facilities . . . . .	C-1
1. Definitions . . . . .	C-1
2. Discussion . . . . .	C-6

TABLE OF CONTENTS  
(Continued)

	<u>Page</u>
B. Facility Readiness Calculation and Use . . . . .	C-16
REFERENCES	
BIBLIOGRAPHY	
GLOSSARY	

## LIST OF EXHIBITS

		<u>Page</u>
III-1	RPMA PPBER Cycle . . . . .	III-3
III-2	Joint Planning Sequence/Army Planning Sequence . . . . .	III-5
III-3	DoD Management Calendar . . . . .	III-6
III-4	Years Covered by Major Documents . . . . .	III-7
B-1	Task Procedure and Data Partitioning . . . . .	B-2
C-1	Depreciation Guidelines . . . . .	C-4
C-2	Sample Building Cost Index Series . . . . .	C-7
C-3	Price and Construction Cost Indexes . . . . .	C-9
C-4	Unit Cost Adjustment Chart . . . . .	C-12
C-5	Area Price Adjustment . . . . .	C-13
C-6	Empirical Cost Estimates in Military Construction . . . . .	C-15
C-7	Installation Facility Readiness Capability, in Percentage Fill of Aggregated Requirements. . . . .	C-17

## I. INTRODUCTION

### A. Definition of Tasks

This report covers the work and findings of the executive management analysis task of the IFS Phase IIB development. This task is a continuation of the Phase IIA executive decision survey task, which initiated the examination of facility information requirements at the Army levels of management above the Deputy Chief of Staff (DCS) level, beginning at the Office of the Assistant Vice Chief of Staff, Army (OAVC of SA), and including the Office of the Chief of Staff, Army (OC of SA), Office of the Secretary of the Army (OSA), and Office of the Secretary of Defense (OSD). These offices are referred to collectively as the executive level.

The Executive Management Analysis task consisted of the following two major activities.

#### 1. Refinement of Phase IIA Executive Decision Survey Analysis

This activity proceeded from the Phase IIA effort toward the following specific objectives:

- Identification of specific facility data use identifiers (DUI's)<sup>1</sup> currently required by Army and OSD directives and information requirements.
- Identification of duplications or voids in data resulting from a comparison of Chief of Staff Army, Army Secretariat, and OSD data use identifiers with IFS data use identifiers.
- Definition of data use identifier voids that should be filled by the IFS data base.

#### 2. Development of Analytical Procedures

Analytical and interpretive methods were developed by which the IFS data could better support the information needs of the executive level.

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<sup>1</sup>"Data use identifier" replaces the term "data element" used in the Phase IIB proposal. See Section II for an explanation of the use of these terms.

## B. Technical Approach

There were three major work areas associated with the two activities. These were information gathering, compilation and analysis of the information, and development of analytical procedures. The work was conducted roughly in that order, but there was considerable overlap, especially during the mid-period of the task.

### 1. Information Gathering

Information gathering consisted of a review of the Phase IIA executive level findings and a literature search that was augmented by interviews and meetings to clarify certain points. Listings of Department of Defense (DOD) instructions and directives and a corresponding list of Army regulations, pamphlets, etc., were screened for those that appeared to have a bearing on executive interest in facilities. These documents were obtained and reviewed for reporting requirements to the executive level.

Joint Chiefs of Staff (JCS) documents were reviewed also, but without the aid of an organized list of recurring report requirements. The JCS effort was not pursued very intensively because their concerns are primarily outside the continental United States (CONUS), while the present IFS assignment is to cover the Army's CONUS needs. Two months of traffic through the Secretary of the Army's message center were examined to see if needs beyond those already found in the executive decision survey were encountered. Additional reviews covered hearings by the House of Representatives Subcommittee on Appropriations for Operation and Maintenance and Military Construction, a proposed bill and accompanying committee report on military construction for FY 1970, and a file in the DCSLOG Installations Management Division (IMD) for the preparation of the Army Strategic Objectives Plan II. The back-up book of DD Forms 1390 (Military Construction Line Item Data) and 1391 (FY 19\_\_ Military Construction Program used by the DCSLOG Director of Installations in the military construction hearings was also studied.

## 2. Compilation and Analysis of Information

Information requirements needed to satisfy the various reports were analyzed and converted into "input" DUI's that would be needed in the IFS to meet the requirements. A DUI is a technical term used in automatic data processing (ADP) system development; in simple terms it is the name of a box on a form, such as "Installation Address," that is to be filled in. Several of the outputs call for different aggregations of the same basic information. Accordingly, each of the output requirements was examined to determine the lowest common denominator of information that would be needed to meet it and similar requirements. No important overlaps were found in executive level reports for information at the aggregated level. The resulting list of DUI's was then compared to DUI's already planned for inclusion in the IFS data base. The results of the comparison were expressed in terms of DUI duplications and voids in the IFS data base.

Diagrams of the flow and timing of major documents involving the executive level of management were also constructed. The primary source of the diagrams was AR 1-1, which describes the Army planning system. Material gathered on other IFS tasks was used to develop an interface chart showing the executive level interface with the IFS. An attempt was made to obtain the most current version of the Army flow diagrams; however, it was learned during the task that several features of the overall process are undergoing change. (The charts used represent information as of November 1969.)

## 3. Development of Analytical Procedures

The next step was an analysis of selected additional executive information requirements and the development of procedures to meet them. The analytical and interpretive methods and procedures are described only to the point where Army review and comment would be appropriate. Incorporation of the suggestions made would require the addition of more DUI's to the IFS.



### C. Constraints

The IFS is designed to service the facilities manager's needs from installation level through the MSC and MAFC levels to the DCS level of HQ DA in order that the DA Staff can support the information requirements of the executive level. The executive level is one of the many external interfaces (addressees) of the IFS. Two priority considerations in the design of the IFS are the communications among the four echelons and communications to and from the external interfaces.

It is important to recognize the proper relationship of this task and report to the IFS Detailed Functional System Requirements (DFSR) task. This report presents the results of analysis of the executive level management requirements, while the IFS DFSR will provide the functional specifications required to actually satisfy the executive level needs. In addition, this report addresses some long-range potential capabilities that should be considered further for possible eventual inclusion in the IFS, but the design of these capabilities will not be included in the IFS DFSR currently being developed. One of these long-range potential capabilities concerns facilities readiness measurement and reporting. A portion of this capability is recognized as currently attainable, is so identified in this report, and is being incorporated in the IFS DFSR.

The data use identifiers needed to satisfy the executive level information requirements are identified in this report. The list of these DUI's was compared with the DUI's currently planned for inclusion in the IFS DFSR (as a result of DUI's identified in the course of individual IFS module design) and the voids were identified. These voids were analyzed to determine two categories of missing DUI's: (1) those which will be included in the IFS DFSR because they are obviously essential, and (2) those that will not be included at this time. The Army should review the results of this analysis of executive information requirements, and determine the appropriateness of eventual inclusion of the latter category, but IFS DFSR schedule constraints preclude incorporation of the results of this Army review in development of the current IFS DFSR.

Integrated Facilities System Office (IFS O) guidance specified the following two constraints related to the scope of the analysis.

- Executive level information dealing with non-CONUS facilities was not to be examined.
- Needs were not to be solicited from the executives interviewed.

D. Report Organization

Following Section I, Introduction, Section II describes the process of refinement of the data identified during the executive level survey. It comments on the executive level reports examined, the data contained therein, and the data duplications and voids in the IFS data base, and it discusses the eventual inclusion of the missing DUI's in the IFS data base. (The actual listings of reports and data elements are contained in Appendix B.) Section III analyzes the executive level in terms of short- and long-range information needs. Section IV describes a series of new procedures for using data to better satisfy the executive management information requirements. There are three appendixes. Appendix A contains a list of visits made during the task. Appendix B lists the reports examined and the data use identifiers used in them and indicates the data voids and duplications in these reports in comparison to the IFS DFSR data base. Appendix C, which contains expanded discussions of facility readiness and current value computational procedures, is followed by a glossary of acronyms, a list of references, and a bibliography.

## II. REFINEMENT OF PHASE IIA ANALYSIS OF EXECUTIVE INFORMATION REQUIREMENTS

### A. Identification of Specific Data Use Identifiers

The primary task of the IFS is to serve the needs for facility information among the echelons from the installation level through the major subordinate commands (MSC) and major Army field commands (MAFC), to the Deputy Chief of Staff level of the Army. Much of the information required at the executive level is the same as that needed at these lower echelons, but some information is collected solely for reports to the executive level. One part of this subtask was to identify the executive level information requirements; another was to compare these requirements with the contents planned for the (automated) IFS data base and indicate the needs that are met and those that are not. These are the "duplications and voids" referred to in the work statement.

Since the term "data use identifier" (DUI) is important in this report, the following definitions are provided from AR 18-12, 22 April 1968:

- Data element — Grouping of information units which has a unique meaning and subcategories (data items) of distinct units or values. Examples of data elements are military personnel grade, sex, race, geographic location, and military unit.
- Data item — Subunit of descriptive information or values classified under a data element. For example, the data element "military personnel grade" contains data items such as sergeant, captain, and colonel.
- Data use identifier — The name given to the use of a data element in a data system. For example, the data element "state," when used in a system, may be assigned a data use identifier, "state of birth" or "state of residence."
- Data chain — A name of title given to the use of a combination of two or more logically related data use identifiers.

An additional distinction is made between an input and an output DUI. An output DUI is an item of information appearing on a report leaving the system. It may be the same as an input DUI or it may be the result of some analytical operation on the input DUI's. The reports reviewed contained output DUI's. These output requirements were analyzed in order to develop candidate input DUI's that could be manipulated to meet the output needs. The results of the report collection and analysis process are reported in Appendix B.

B. Definition of Voids To Be Filled by IFS

1. General

The DUI's in Appendix B are identified either for inclusion in or exclusion from the IFS DFSP. Those DUI's not to be included in the IFS DFSP are facility-oriented input DUI's required to produce executive level outputs prescribed in existing regulations. All of the data requirements represented by the excluded DUI's can be filled with an expansion of the initial DFSP. In the interim, or on a continuing basis, the missing DUI's can be made available via hard copy or other manual means.

2. Criteria for Inclusion or Exclusion of DUI's

The addition of a DUI to the automated or even the manual part of the IFS requires judgment. Rapid availability and coordination with other IFS data along with the value of any additional analytical capabilities that may thus be made possible are the dominant positive considerations. Some negative considerations are listed below.

a. The DUI may not contribute importantly to an executive decision, even though it is required by an executive level addressee. (Data on steam sash, screens, and major appliances may fall in this class.)

b. A considerable amount of work and discipline for the Army is implied by inclusion since the data must be carefully and faithfully collected and inserted in the data base on schedule.

c. The report may be needed infrequently, involve minor interaction with the principal facility management activities or serve some highly specialized need. Inclusion in the manual IFS or simple hard-copy availability of such material may suffice.

d. The information may be obtainable when needed from another system (such as Family Housing data).

e. While specific costs are not known at this time, the inclusion of any DUI in the IFS or the preparation of an added report is a costly and time-consuming process.

Particular attention is being given in the IFS DFSR design to the procedures for adding new input data, processing methods for further IFS applications, and meeting added output requirements. These procedures are not described in this report, but will be included in the DFSR report. There is no technical problem preventing the future coverage of the DUI's identified in this report as being excluded from the current IFS DFSR. The constraints at this time are those imposed by the schedule for development and publication of the IFS DFSR. It is expected that still more requirements for information will be identified by executives after the current DFSR has been reviewed and approved by the Army and experience is gained using the basic IFS. At such a time it will be possible to estimate with some accuracy the costs of adding new capabilities and to weigh these costs against expected benefits.

### III. ANALYSIS OF EXECUTIVE LEVEL NEEDS

#### A. Background

The purpose of this subtask is to identify executive-level information requirements and to determine IFS responsiveness to these needs. Analysis indicated that a broad approach was required, one that looked at executive-level needs in terms of the adequacy of facility data presently available for facility management resource and programming decisions. Facility data needs at the executive level are presently met in two ways: —formally (standard) or informally (special).

Formal data requirements are those expressed in regulations, directives, or other published documents. These data serve a number of purposes, some directly related to the decision or policy process, others for information only. Some of the present formal requirements were developed to meet data needs not directly related to the normal management functions. An example is the Maintenance and Operation of Real Property (MORP) Exhibit 13 report, part of which furnishes data related to the Maintenance of Real Property Facilities (MRPF) floor and Backlog of Essential Maintenance and Repair (BEMAR) for RPMA. These data are important in planning, programming, and budgeting decisions at the executive level but not in the detailed format presently prescribed. The example is used to illustrate that executive needs as presently expressed may change to require less detailed facility data when the IFS and the IFS data base are available to meet those needs.

Informal or special requirements for facility data are those needs not pressed through official publications, for example, telephone calls and informal visits to offices. Informal channels are important in the day-to-day management of facilities; however, these channels are frequently used to overcome deficiencies in the formal structure of information flow. The establishment of the IFS and a focal point at HQ DA for all facility data contained within the system should contribute to a better definition of executive needs and an adequate response to those needs.

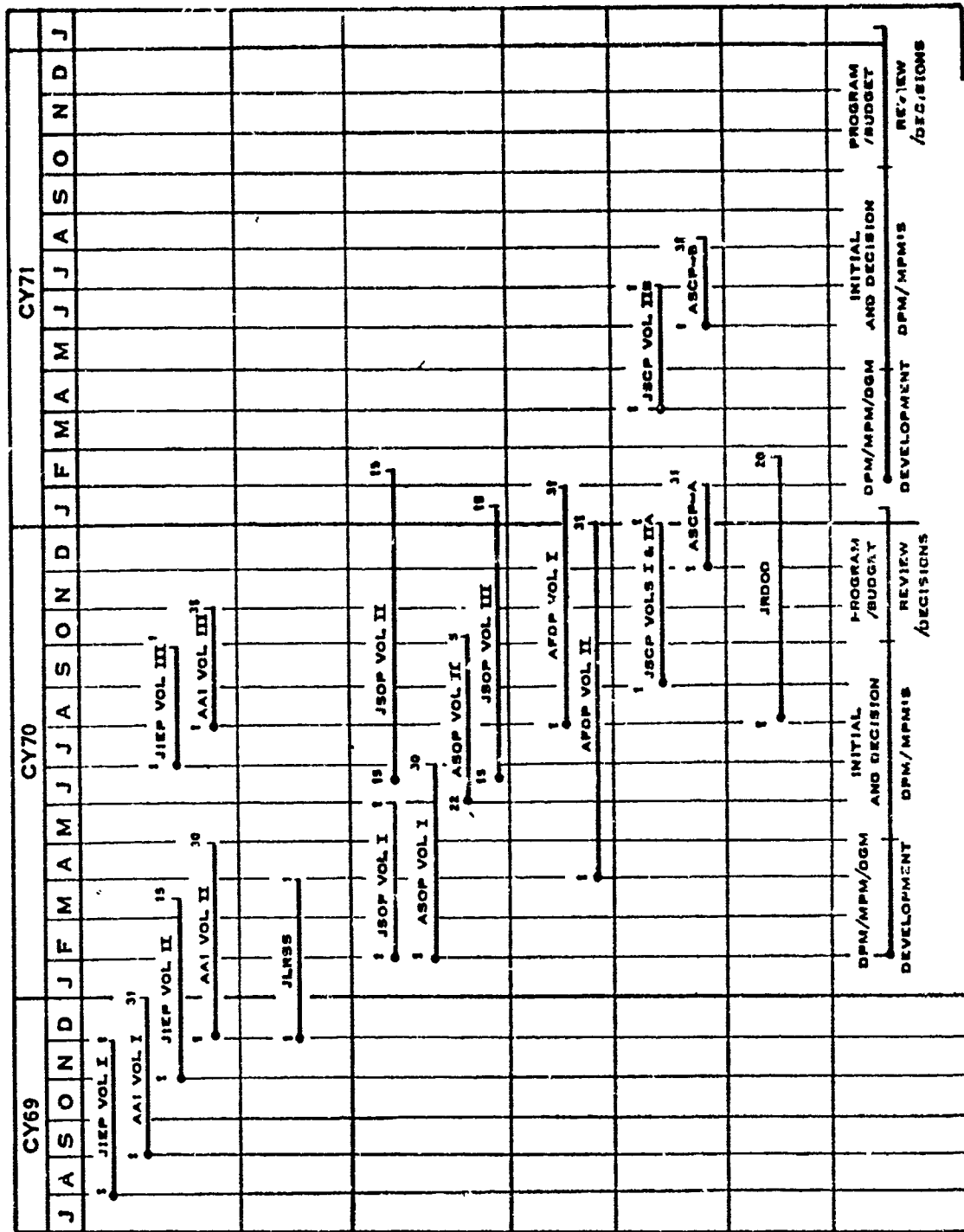
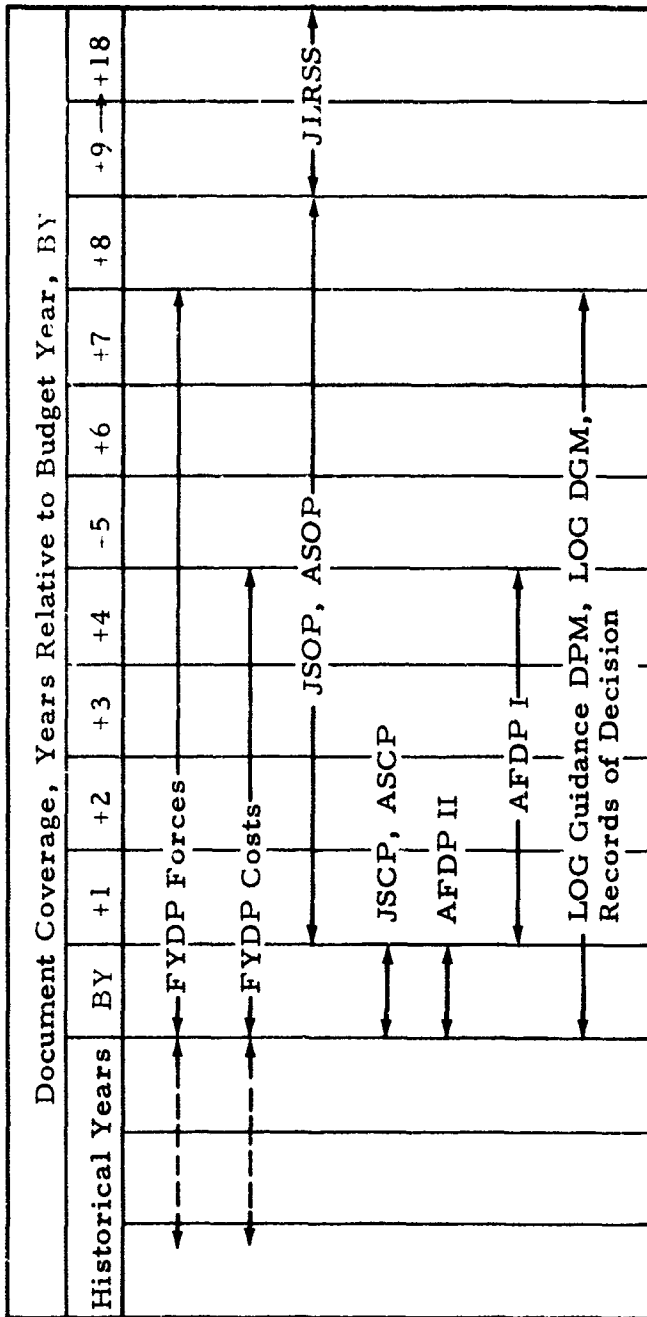


EXHIBIT III-2 JOINT PLANNING SEQUENCE/ARMY PLANNING SEQUENCE







AAI = Army Analysis of Intelligence  
 AFDP = Army Force Development  
 JIEP = Joint Intelligence Estimate for Planning  
 JLRSS = Joint Long Range Strategic Study

J } SOP = Joint } Strategic Objectives Plan  
 A } SOP = Army }  
 J } SCP = Joint } Strategic Capabilities Plan  
 A } SCP = Army }  
 SCP I = Concepts, Tasks, Guidance  
 SCP II = Forces

2. The figures representing facility data are related in complex ways and sometimes only to a minor degree to the problem of deciding which way money should be spent. (The Army assigns priorities to construction projects, providing comparative historical statistics as justification. Frequently the significance of the figures provided is difficult to appreciate.)

3. As a corollary to 2 above, large-scale tradeoff information is hard to find. This does not imply that numerical tradeoff analyses would be sufficient to make the "best" choices; sometimes nontechnical considerations are controlling. However, it would be helpful if the construction and RPMA information could be packaged with possible tradeoffs against less tangible or analytical factors in mind.

IFS will improve the quality of facility management data through its comprehensive and carefully integrated data base. However, practically all the reports now going to the executive level are composed of unanalyzed data or facts. There are very few guidelines to help an executive decide what is reasonable. This brings out the difference between data and information.

Information may be defined as a description of a situation in terms that help resolve a question about the situation. It may be sufficient merely to present data as they were collected or perhaps in some aggregated form, but frequently this approach falls short. The problem is that executives need help in weighing alternatives, and usually much analysis is necessary to convert raw facts into some common terms of measurement in order to do the weighing. The result of such analysis is information.

In order to be called information, a description must tell the user something he did not know before but needs to know for the decision before him. If the data analysis were carried far enough, the best course of action would be identified and the need to bring the issue to the executive for decision would be eliminated. The executive's role would then be to set policies, which can be regarded as the standardized process for completing the analysis. Frequently policies are not developed this thoroughly and systematically. Instead, successive review points are inserted to guard against policy imperfections and unforeseen circumstances.

Assembling a dependable, internally consistent data base complete enough to meet the primary needs for facility management is the primary function of IFS. The second function is to provide selected procedures for processing the data in support of management control and planning. These procedures can range from simple aggregation and report preparation to complex analytical processes, and each type of information could require a different procedure for its preparation.

C. IFS Support of Executive Level Needs

The nature and even the format of the major kinds of required information are basically the same from year to year. This is partly a result of the inertia of massive reporting systems, partly because the interests of particular executives persist from year to year, and partly because the executives prefer familiar reporting systems. Changes can be made if they are sufficiently attractive, but revision of the bases and methods of reporting is not encouraged. Since IFS is an evolutionary system, the approach taken in this discussion is that long-range objectives should be identified and that changes should be proposed to improve facility management in the near term and to work toward long-range objectives. IFS should have no difficulty producing standardized reports so long as the input data are available, since data compilation takes place prior to the formal call for the information.

One of the concerns regarding the IFS design is its ability to respond to information requirements in a timely manner. The response-time components can be divided into data accumulation, selection, and analysis, and report preparation. Both the content and the approximate due dates of the major reports going to the executives are well known usually several months in advance of the need. Subsection F, Appendix B, lists the recurring reports going to executives, the office responsible for preparation, and, where known, the as-of and due dates. The shortest reaction times for reports going to the executive level relate to family housing and are as low as 10 days. The others range from 15 days upward to several months. These periods are long when compared to the reaction time of ADP equipment. There is no reason for the IFS system to be a constraint in responding to these schedules so long as the files contain the necessary

data. The formats and associated processing requirements are known well in advance.

The problem of responding to nonstandard requests is a problem of another dimension. In one case, a witness at a Congressional hearing was asked to get some information during a lunch period. This was a rather simple request for some financial information from a previous year and merely required a file search. More complex requests with a similar reaction time must be expected, and since they can be quite important, the need for a flexible retrieval system can be foreseen. It is not recommended that any recurring reports be prepared in anticipation of non-standard or special inquiries. However, certain kinds of information such as Congressional Districts and Office of Emergency Preparedness Regions can be collected and placed in the IFS data base on a one-time basis. A special inquiry capability included in the IFS will permit data retrieval according to selected categories. Accommodation for special inquiries in the IFS design should not take precedence over arrangements for convenient normal operations. For example, if files are arranged first by command structure, then the retrieval and aggregation of data by facility category, appropriation, or permanent and temporary construction, will be more costly than if the files were arranged according to the direct interest of the inquiry. Obviously, some IFS applications will be more efficiently served than others.

There will also be some information in the IFS that is not in the automated file. This information will generally be in hard copy and will consist of items containing narrative comments and signatures, and items for which manual, rather than machine, handling is effective. For instance, fuel conversion documents, fish and wildlife management reports, and forms covering the detail of benefits in the economic analysis of DOD investments appear to be good candidates for manual handling. Manual treatment is attractive when the number of reports is small (e.g., a file of 50 documents or less) or where the amount of money involved is small. Significant figures and reference material that have application to the executive level in the planning, programming, budgeting, execution, and review (PPBER) process should be available in the automated file for arriving at decisions and totals.

One of the main objectives of IFS is to meet the need for high quality statistical information. Once this need is substantially met, executives will quite possibly ask for organized information on reasonable error ranges of the basic statistics. These departures from the estimate are the composite effect of unforeseen or neglected factors. Estimates of expected error are part of the perspective an executive should have available to combine with other uncertainties about each issue in question.

The second need is for increasingly concise relationships between cause and effect (i.e., between allocation of funds and mission accomplishment). At the most elementary level, this means planning factors. Each echelon probably would have its own planning factors, possibly unique but preferably traceable from more detailed factors. Preferably these planning factors should be developed in a hierarchical fashion following command echelons.

Some of these planning factors exist now, but their origins frequently are in question. There are several shortcomings in planning factors as they presently exist:

1. The content of the factor (what is included and excluded) is sometimes not appreciated.
2. Where several factors are involved in a calculation, there is no guarantee that they are consistent with one another.
3. The circumstances in which the factor was derived may not be representative of the intended application.
4. As a corollary to 3, it may not be acceptable to project the factors through the period of time covered by a budget or plan.

The IFS can be used to generate and maintain a group of planning factors and add or delete factors as experience is gained with the system. These factors should be carried out to two, at most three, significant figures so as not to convey an unwarranted impression of accuracy. Tolerable departures from normal should be developed and included for subsequent "management by exception" purposes.

Planning factors should be updated at least as part of a prior year performance review. These factors should cover RPMA, new construction, and user requirements. After the learning period, it should be possible to delegate this task to a computer. The factors resulting from the review

could then be the basis for generating similar arrays for each year in the FYDP planning period. Allowances should be made for increasing uncertainty as projections go farther into the future by widening the tolerances and rounding to fewer significant figures. The basis for projection should at least include allowances for rising costs, either in absolute, current price or even present value terms. Because of their familiarity, it would probably be best to develop planning factors around budget programs or other accounting structures.

The factors generated in this manner will be indicators of past and present performance related to facilities. If the results of current practice are considered acceptable, then the factors can be used as allowances in future planning. Alternatively, the factors can be adjusted by executive decision, within limits, to express the intent of new policy.

Since this still leaves the executive with a large mass of data/information to handle, he may want to pursue another approach and systematize at least some of the tradeoffs among unlike goods and services. This type of extension is outlined in the discussions of facility readiness applications (Section IV).

Another goal of IFS is to do more than merely provide the information identified in current documentation. Therefore, this discussion is broadened to equate a deficiency with a potential improvement. Some items discussed are within the present IFS scope and some rely on the data in the IFS data base for accomplishment. Information deficiencies may be classified as follows:

1. Information is not generated because one or more of the following elements is missing:
  - Stated requirement
  - Input data
  - Compilation method
2. Information is generated, but falls short in one or more of the following ways:
  - Completeness
    - Geographical
    - Facility types
    - Facility users

- Cost components and other factors
- Analytical method
- Relevance to Decision
  - Conciseness
    - Presence of Peripheral or unrelated data
    - Too much detail
  - Sensitivity
    - Explanation of tradeoffs
    - Discrimination among the effects of alternative decisions
  - Freshness of input data
  - Similarity of analyzed problem to current problem
- Credibility
  - Accuracy of input data
  - Availability of parallel reasonableness tests and perspective
  - Compatibility of input data and analytical methods
  - Exploration of alternatives
- General Deficiencies
  - Inadequate search for optional or optimum solutions
  - Unspecified estimates of error range
  - Obsolescent planning factors
  - Complex input specification
  - Too much time and cost required to get answers
  - Narrow problem treatment

Many of the deficiencies listed above are open-ended in the sense that criticism can be raised about any information system. IFS will do much to reduce the seriousness of several of them, using the design now in progress.

Improving the input data quality in all respects is receiving major attention. The data base is being designed to support specific analyses of a wide range of standard report requirements. The meaning of each item of data is being studied carefully to be sure it fits the intended use.

Data are also being studied in groups to ensure compatibility and completeness with respect to each application. Editing methods are being designed for input data to catch format errors and major numerical errors. File maintenance procedures will ensure that new data are inserted on an orderly calendar schedule and that historical files are maintained.

A list of data requirements at the executive level not planned for inclusion in the IFS data base is included in Appendix B (subsection C). Few, if any of the missing items should concern executives on a regular basis. It is suggested that the missing items be left out of the IFS data base unless it is found that they are essential to an IFS management control process, as the information would still be available within existing manual reporting channels.

Specific measures are being taken to improve facility management in the RPMA area. One deficiency addressed is that anticipated RPMA requirements and costs are not known soon enough to affect the formative stages of DOD and Army planning and programming. One new type of report planned is the Unconstrained Requirements Report (URR). It will address the four major areas of RPMA and provide technical and dollar requirements information. The URR, prepared in response to the February guidance, will be based on knowledge of plans and resources for the current FY and the COB/FURR, and will cover the year after the budget year in detail and provide less detailed coverage of the next 4 years in the FYDP.

The URR and estimates derived from it belong to a coordinated group of proposed RPMA reports. This group contains all the information required currently for developing RPMA requirements and providing management data above the installation level. Added strength comes from the greater time coverage, comprehensive treatment of RPMA needs, and the use of an integrated data base. The BEMAR report will no longer be needed, since the URR and FURR will provide these data as well as additional information. (See PRC R-1209, Vol. II, Part 3, December 1969, for details.)

Several other deficiencies in facility information will also be reduced by IFS. Others, however, are beyond the scope of the present



IFS design to handle, but are being considered as growth targets. Improvements come basically from exploiting computer capabilities to handle more data in an orderly manner. Detailed integrated coverage is extended to geography, facility types, user requirements, budgeting interactions, and fiscal years. The following features of the current design are considered important improvements:

1. Inclusion of the URR and the coordinated set of associated RPMA reports that were described earlier.
2. Introduction of a stationing plan for new construction to replace the current plan that deals only with permanent construction, thus allowing better master planning by giving fair weight to temporary and semipermanent construction and assets.
3. Improved service to high-level planners facilitating faster responses to executive-level inquiries and more effective use of detailed analysis capabilities at lower echelons.
4. Integrated treatment of RPMA, New Construction and Facility Planning in all 5 years in the FYDP.
5. Orderly use of historical experience in developing future planning factors.
6. A comprehensive and coordinated facility asset file, primarily designed to meet facility management requirements, but including some additional data to help prepare reports going to executive levels and answer special questions.
7. Introduction of a facility readiness and utilization efficiency measurement system.
8. Consideration of facility condition in facility planning and establishing unconstrained RPMA requirements.
9. A computerized facility planning system that makes coordinated use of user requirements files, and a file of assets. The asset file will contain current projections for 5 years in the FYDP to support stationing feasibility analyses and program development for that time period.

10. Growth capabilities that include estimation of the current value to the Army of existing facilities and extension of the basic readiness and efficiency indices for use in facility planning and general facility program refinement.

D. Recommendations

Some features of the following recommendations referring to long-range IFS capabilities (see Section IV for further treatment of each) are applicable for inclusion in the IFS design under preparation, while others are natural extensions of the current IFS.

In particular, facility readiness measurement and reporting will be included in the current IFS design. This does not mean as exploitation of the full potential for using facility readiness in the decision process but the creation of an initial capability by the IFS. This initial capability is a coordinated reporting of the quantity of each facility type at each installation which is authorized to the occupying forces and the quantity provided to these forces. Extensions of the method to cover costs of relieving deficits and to participate in more comprehensive analyses should be reserved for IFS growth.

1. Readiness

PRC has defined a facility readiness efficiency index which relies upon ratios of number of facilities provided to number of facilities authorized, and number of facilities provided to number of facilities available. This methodology is described in Appendix C and this capability is planned for incorporation in the IFS DFSR.

A method for computing and using a refined facility readiness index developed by PRC and described in this report (Appendix C) will require additional effort beyond the means provided in the present IFS contract in order to be developed fully. This refined capability requires the addition to the IFS of two new elements of information (refined unit cost and user value), both of which require action by the Army in order to be developed.

It is recommended that the Army:

- a. Develop and collect the data needed to establish the value of a facility to a potential facility user.
- b. Develop a basis for determining the unit cost of providing facility units. The cost should at least cover RPMA expenses and, depending on the acceptability of Recommendation 2 (Current Value), an equitable share of the investment in the facility type being occupied. The latter item would convert investments into expenses by treating facilities as long-term consumables.

## 2. Current Value

Several approaches for estimating the current value of the Army's facility investment are described in this report. The methods differ in reliability in relation to the quality of the available data.

Current value estimates could provide useful perspective when making decisions about maintenance, repair, activation, modification, and demolition. If facilities are regarded as long-term consumables, their annual loss in value can be treated as a component of operating expense. This is a step towards computing a "total facility dollar." It is recommended that:

- a. A memorandum account be established to be updated annually containing estimates of the current value of facilities (but not land) owned by the Army. The level of detail should be consistent with that required at the installation level for facility planning and investment protection purposes.
- b. A basis be selected for systematically reducing facility value with the passage of time to account for reducing mission suitability and other factors such as decreasing maintenance efficiency.
- c. This work be done initially without requiring any special reports from the field. It is expected that a very large part of the work can be done using data collected in the normal course of business. One objective is to test this hypothesis; another is to develop as independent a basis as possible for reviewing incoming bids, costs, and appraisals.

### 3. Major Maintenance and Repair

Protection of the investment in facilities is a major concern of the Army and Congress. Congress designates a portion of the O&MA budget as the Maintenance of Real Property Facilities (MRPF) floor in an attempt to insure against neglect of facility maintenance. The Army reports its BEMAR annually. Nominally speaking, a high MRPF floor should result in a lower year-end backlog, and conversely. This correlation is not the case in practice since there are too many intervening factors to make the MRPF floor an effective backlog control device. Changes in facility requirements and reporting instructions are among such intervening factors. Since information is essential to control it is recommended that:

a. Major repair project proposals be formalized by providing at least the following information from the installation level:<sup>1</sup>

- A unique project serial number and revision suffix
- Installation identification
- Date of origination
- Date of most recent revision
- Asset to be improved (FC&CCC and number of units)
- Current asset condition rating
- Brief description of work
- Estimated total cost
- Portion of total cost assigned to increase of asset value
- Current priority
- Date of final disposition
- Type of final disposition (e.g., completed as proposed, dropped)
- Actual cost
- Status: authorized, approved, funded, work in process
- Expenditures to date

It is the intent that all entries on such a form be encodable; even

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<sup>1</sup> Some, but not all of the listed information is currently required by AR 420-20 and AR 420-21

the description of work could be a two- or three- digit number representing standard types of work. Similar systems have been developed to classify equipment repair work.

b. The certified inspection teams proposed in the IFS RPMA design document verify the information on these project proposals during their inspections. The anticipated increase in facility value should correlate closely with the  $\Delta$ \$ estimate, which is the cost to restore a facility to Condition 1.

c. Summary reports be prepared to provide statistical information covering at least:

- Total dollar backlog
- Portion of this backlog representing change in investment value
- Actual and previous estimated cost of completed projects for projects closed out in previous year; total estimated cost by type of closeout for other closeouts.
- Expenditures and cost to complete projects in process
- Value of new projects by funding status
- Value of projects carried over
- Value of changes in dollar scope during the previous year

#### 4. Facility Planning and Planning Factors

A facility planning capability is part of the current IFS development. The design is still in process so that its exact final form is not known at this time. The basic design is necessarily complex in order to handle a wide variety of situations. The design also contains many simplifying options. A rapid stationing analysis capability can be quite useful for initial analysis of plan feasibility and for the assessment of priorities if the data input requirements and computation turnaround time are reasonable. Strictly for reasons of efficiency and convenience where a detailed solution is not essential, it is recommended that:

a. Consideration be given as a growth capability to the design of a rapid stationing analysis system for use at the DCS

level, once the facility planning capability of the IFS is operational and experience has been gained in its use. This design would be an abstract of the full capability design in order to ensure compatibility of planning factors and outputs. Emphasis should be given to simplicity of input preparation and short computer compilation and running time. Inputs should correspond to data developed in the early stages of FYDP analysis.

b. The planning factors used in these calculations be updated and published periodically along with their definitions and methods of use. These factors should be derived from those used in the main system and include projections covering the FYDP planning period.

## IV. DEVELOPMENT OF ANALYTICAL PROCEDURES

### A. General

A well-designed data base contains much more information than its basic raw data. This section primarily discusses the data as statistical observations, rather than as material to be simply listed, sorted, and added. An executive has need for both sums and higher statistics; he can have them both from the same data bank and can use them to reinforce each other. With careful design it is possible to obtain averages, estimates of reasonable departures from the average, and trend information, to detect correlations, and generally to convert experience into efficient numerical planning tools. The section also discusses setting up cost-effectiveness tradeoff relationships wherein two or more facility types or other goods and services compete for a single resource (usually money). A third idea discussed is the deliberate use of successive refinement and cycles of adjustment to meet continuously changing conditions. (This is a formal way of describing, for example, the feedback processes a driver uses to stay on the road.)

Facility management is part of a dynamic system that uses feedback control. In feedback control, a system, in this case the facility management system at the next lower echelon, is given a command signal (a mission). The system then responds and the response is measured and reported back. The report is compared with the command. This comparison may then be used both for performance measurement and generation of a new command signal.

Thus we have identified three elements important to executives that deal with designing information for its intended use:

1. An ability to organize, deal with, and use uncertainty and variations to advantage.
2. An ability to weigh the advantages of competing alternatives and thus to identify a preferred action.
3. A consolidation of command, control, and performance measurement.

All these possibilities can be extracted from a conceptually simple data base if it is sound and well-designed. Although this report deals with the information requirements of a special set of executives, the principles can readily be applied to other levels.

IFS is discussed as a primary enabling tool in five areas, all of which would interact given a sufficiently high level of system development, though this point is not stressed. This potential interaction has an effect on the design of each, however, since all should be designed compatibly from the start in case interactions should ever be desired. Compatibility is maintained largely by using consistent terms of measurement.

Each area has another important characteristic. It is not necessary to employ all the features described. There are several levels or degrees of implementation, each with its own level of benefit. There are also further elaborations which are not described. Each item is described briefly in this subsection and in more detail in later subsections.

#### B. Proposed Changes

The types of facility information currently going to executives are generally simple aggregations of data generated and used by subordinates. Thus, it is not surprising to find that the formal requirements of executives will be substantially met in the course of IFS development. Some minor items, which can readily be covered, are missing from the IFS such as a code for an installation's Office of Emergency Planning region. Others, such as those bearing on personnel strength and details in the Family Housing area, can be obtained from other source systems if they are really needed.

Five areas of future improvement in which the IFS could play an important role are outlined below and subsequently discussed more fully. The most demanding area in terms of data requirements and computation is the development and use of readiness criteria for trade-off calculations. The other areas are comparatively simple to handle. It will be seen that the breakout among the areas is somewhat artificial since all the areas can interact to some degree. The five areas are as follows:



#### 1. Facility Readiness

The concept of unit readiness with respect to personnel and equipment which takes into account the subordinate factors of training and operability has been found useful to the Army in the past. It has a function in resource allocation since it highlights limiting shortages. An enlarged concept of readiness to include facilities readiness of installations and facility condition appears both useful and practical. (see Appendix C). The approach could aid materially in setting priorities in assets development (master planning as well as construction and maintenance programming) and in force-stationing planning.

#### 2. Current Value of Improvements

The cost of land and improvements to the U.S. Government is currently available; however, these costs are not adjusted to the present date and hence have limited value in providing perspective for evaluations and decisions. It appears that current value estimates of many structures can be developed without great effort and that these estimates would be useful for many purposes. One application is to show the effects of major repairs on protecting facility investments; another is to enable the equitable charging of facility investments against annual programs and program elements. Estimation of land values is quite a different matter. No suggestions are made with respect to land and some improvements may have to be left out.

#### 3. Summary Planning Factors

These factors would be needed specifically to support the rapid stationing analysis capability and should be updated periodically. The updating feature is to take care of changes in costs, allowances, and technical practices and could even include out-year projections for these factors.

#### 4. Rapid Stationing Analysis

A need is foreseen for a facility planning capability to serve two divergent requirements: the detailed capability, which is part of the current IFS design, and a high level planning capability, where

precision is sacrificed for speed and only coarse inputs may be available on which to base the analyses.

5. Essential Maintenance and Repair Requirements

There is a great need for better executive information in this area. The main questions are:

- What are the facilities involved?
- What are the changes and causes of change from the last report?
- What are the expected results if the recommended actions are taken?
- What are the costs associated with the recommended plan and the principal alternatives?

Readiness and current value are discussed in more detail on the following pages and in Appendix C. The expansions that follow are presented in the same sequence. An attempt is made to show how the subjects interact.

C. Readiness and Use of Readiness Indices

One approach to the development and calculation of readiness indices is presented in Appendix C. The resulting readiness index is a dimensionless number found by dividing the value of what is provided by the value of what is authorized to the units stationed at a particular installation or collection of installations. The facility planning module is designed to use authorizations of facilities calculated at the full TO&E strength of units being stationed, whether or not they have been assigned REDCAT I. This means that deficits will be inflated to the extent that units are not at full strength, on the basis of either operating strengths or Authorized Level of Organization (ALO) assignments. However, the proposed concept will still work under these circumstances, as far as the computing process itself is concerned.

Exhibit C-7 in Appendix C outlines a readiness rating scheme very similar to that used in determining unit readiness. Instead of being tied to personnel, equipment, and training, suggested elements include living accommodations, training facilities, and maintenance

facilities. The resulting readiness indices correspond to ranges of fill percentages of the corresponding facility types. The immediate difficulty in applying that kind of measure is in determining the weighting factors to be used in judging the importance of different shortages among members in the group. It is easy enough to compute the percentage fill of barracks, but if barracks and mess halls are in the same larger group, the ability to state the readiness of the group implies an ability to exchange barracks for mess halls. The issue then is, what should be the exchange rate? It is proposed to develop a valuation procedure which deals in a coordinated way with the cost to provide the next increment of each facility type and the seriousness of the residual deficiency in the context of the proposed stationing plan. The methodology is outlined in Appendix C.

There are several rather closely related uses to which these indices and the capability to compute them could be put. The basic ingredients are a file of the assets at the various installations, a description of the forces intended to occupy them, certain types of cost information, and some rules to relate values to the user with various percentages of fill. These inputs could be hypothetical or actual, present or future. Therefore, the indices could be used to evaluate plans and contingencies (including mobilization) as well as to report existing or past situations. Four applications are described below, arranged by increasing complexity and each building on results of preceding applications.

1. The first step is to compute readiness at installation level. As mentioned before, this index is the ratio of the value of the facilities provided to the value of the facilities authorized. If this is a status report of the current situation, these installations should also report the major facility types that are depressing their index and the unit price to provide the next increment of capability for these types. The report should also state how much the index would improve, considering separately an increment of one unit of each of the limiting types. The unit price need not be a charge for new construction costs. In some cases, activation or rehabilitation might be the preferred approach. A companion index of utilization efficiency should also be computed, which is a ratio

of the value of facilities provided to the value of facilities available.

This pair of indices, which is discussed in Appendix C, could be quite helpful in rapidly assessing the employment of a given installation.

The cost of providing facilities could include components of both RPMA and construction costs. If this is to be done, however, then a way must be found to express investment and expense costs in common terms. Either RPMA costs must be extended over some lifetime of the facility or else the facility must be regarded as being consumed at some rate. This raises several questions regarding, e.g., the costs that should be included and the way they should be discounted. Since these problems are surmounted in industry, we know that one or more solutions exist. Therefore, some basis for combining these two costs can be found and used in the pricing and valuation process. Since force units very seldom remain in one place for the life of a building, and the buildings exist to serve them and their missions, it appears more attractive to compute costs to be provided on a rate basis. Dollars per man-year or dollars per man-quarter are examples of the costing basis.

2. Once the ability to place values on unlike facilities in common terms is established, it is immediately possible to extend the same readiness and efficiency index calculations to higher order combinations. Probably the most attractive type of combination is a roll-up by command. Actually, any desired combination of facility types and installations can be accommodated, so long as the data are available in the IFS data base.

3. A third area of application is the optimization of stationing plans. One approach to stationing planning can be developed by arranging the force units in some predetermined sequence such as a combination of size, priority, and complexity of requirements. Each unit in turn can then be "assigned" to the installation that is most attractive or least unattractive at that stage of the solution, the residual assets at that installation decremented appropriately, and the next force unit brought in for each facility type across all the installations involved in the run. These are the total quantity of facilities provided, total surpluses available, and total deficits. Some cancellations of surpluses and deficits for a given facility type might be achieved by switching units around, but then

surpluses and deficits may become larger for some other facility types. The relative sizes of these three sums can therefore be used as a rough gauge of the potential for plan improvement. In the ideal situation, surpluses could be used to cancel out deficits until one or the other quantity was driven to zero for each facility type. In any case, the executive could see in a concise way how far the proposed stationing solution departs from an unconstrained optimum given the assumed assets and requirements. He can then tell whether a new solution should be attempted or whether this one is close enough for his purposes. This information could then be coupled with the readiness report to develop a course of action. Three basic courses of action are open: change the assets, change the requirements, or change the stationing arrangement.

The readiness index computations method can be used to make the search for a better stationing arrangement more efficient. Perhaps the simplest way to understand the application is to assume that a stationing solution has been developed in which a place has been assigned to every unit. It is not important at this stage whether the solution is a particularly good one or not. All that is needed is a departure point for subsequent adjustments.

A better solution is, by definition, one which produces a higher overall readiness index. The essence of the approach is to move units around until no further arrangements can be found that will produce a higher readiness, given the assumed assets, and requirements. This problem could be regarded as a linear programming problem except for the fact that the connecting relationships are not necessarily linear. However, several search procedures could be applied, with the final selection being determined by how easily the users understand the method by computer usage efficiency in a particular application.

The line of reasoning could go as follows. Assume that the initial solution is not optimum. If this is the case, there must be a better assignment for at least one man in one of the units, and perhaps even for the whole unit. (For the time being, let us set aside considerations of unit integrity. These can be brought in later once the characteristics of the unconstrained solution are known.) Suppose now that men

were shifted one at a time to an installation at which the readiness with respect to their requirements is higher than where they currently are. Each shift will cause a rise in the readiness of the installation which they are leaving and a decrease at their destination. When the two installation readinesses become equal, there is no further incentive to move. At the end of this settling-out procedure, all men having like requirements should be at installations that meet their requirements with equal completeness. This does not mean that all requirements across the entire Army would be equally well met. The equality relates only to groups with like needs. At this stage, the remaining step is to round off the assignments so as to recover unit integrity. A problem very much like this was solved and programmed by PRC for the General Services Administration, and the system has been in operational use for about 2 years. This Redistribution and Disposal System (RADS) is used to redistribute inventory that is in long supply among a nationwide network of warehouses.

The GSA problem differs from the Army's problem in two major ways. First, strong influence of transportation costs in the GSA problem required a more complex treatment than would be necessary in the Army's case. Second, catalog items were treated independently of each other whereas there is considerable intergroup competition for common facilities in the Army. However, the use of some similar approach would enable the Army to say with confidence that they have examined all possible alternatives and that their analysis of needs is based upon this thorough search.

4. The foregoing capabilities could make possible an important change in the current system of proposals, review, and priority setting. The current approach to facility planning is to interpret the requirements expressed in the FYDP and to pass these successively downward to the installation level. Work plans and construction proposals are then prepared and passed upward for review and adjustment of priorities. By the time the proposals arrive for review, conditions may have changed so much that a quite different mix of needs exists. Some of the proposals are no longer appropriate and the time spent in preparing them is essentially wasted. There will always be some time interval between

statement of requirements and response and, therefore, some amount of waste motion in the planning process. The entire procedure can be improved in several ways by applying IFS.

The principal change is that much more preliminary work would be done at the HQ DA level. Cost estimates for contingencies could be developed more easily without having to involve the lower echelons unless this was desired. High-quality stationing plans could be roughed out for each situation. Since identification of facility surpluses and shortages and the readiness impact of these factors is part of plan development, project descriptions and their priority would be known. Each plan would have its own package. As a result, it would be only a small step for the DA staff to prepare preliminary sets of DD forms 1390 and 1391 for each plan under consideration. The set corresponding to the FYDP could then be distributed through the commands to the installations for more detailed development and preparation of plans. These would amount to requests for proposal or bid from the installations and would include estimates of what the projects are expected to cost. The remaining packages would be held at the DCS level to respond to executive requests for information.

#### D. Current Value of Improvements

An executive ought to have some idea of the value of a building or other improvement he is planning to maintain, up-grade, convert, demolish, or otherwise dispose of. This type of information is not currently available on a routine basis but it would give the executive a much better perspective in making his decisions. Land values are specifically excluded from this discussion because of the extreme complexity of the land valuation process.

One of the types of information currently reported annually is the cost to the U.S. Government, or a fair market value of properties acquired by means other than purchase, of property controlled by the U.S. Army. One important deficiency of these figures for most executive purposes is that they are simply the cost or value in dollars as of the date of acquisition. There is no adjustment for subsequent inflation, obsolescence,

deterioration, or changes in building costs. A review of construction projects shows a range of years of initial occupancy for installations from 1778 for the U.S. Military Academy to 1957 for the Suitland Annex in Maryland. There were 24 initial occupancies in and around World War I, 38 around World War II, and 12 dating back into the 1800's. Of course, this does not mean that all buildings on these posts are too old, but that original costs cannot be a very sound basis for judgment. A rumored rule of thumb is that original costs are multiplied by a factor of 4 to develop an estimate of current value.

One of the future concerns of the IFS should be to develop current values to be placed on facilities. No abnormal data collection efforts are required. It is proposed instead only to use information that would be collected in the normal course of business and to make extensive use of the IFS data base, available tabular information, and computer capabilities for making comparisons. Several ways of developing these values will be discussed in the approximate order of decreasing reliability. Value is defined here as current reproduction cost<sup>1</sup> less allowances for obsolescence and deterioration. It is expected that the preferred method will be used in each instance and that these estimates will tend to be more accurate for the facilities of greatest interest. At the top of the list is recent actual price.

Second and third preferences go to contractor bids and appraisals. As with the new construction costs, each of these will be most accurate only for the particular building in question. Extension to other buildings by reason of similarity ranks considerably lower on the list.

The next approach is based on the extensive application of the material in AR 415-7, Construction, Empirical Cost Estimates for Military Construction and Price Adjustment Factors. This regulation

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<sup>1</sup> The reproduction cost of a building is the total cost of construction required to replace the subject building with an exact replica. The replacement cost of a building is the total cost of construction required to replace the subject building with a substitute of like utility. (See Ref. 4)



contains one graph and two tables that can be readily automated and ways of developing estimates where actual costs, direct bids, or appraisals are not available. The graph and two tables are designed to be used together, but it appears that their value is not limited in this respect. The graph is a unit cost adjustment chart for developing the estimated cost of a similar type building when the gross floor area varies from that shown for the standard structures described in the second table. Table II is a long list of typical buildings, providing the following information: category code, descriptive title, standard drawing number, size and unit of measure, unit price, total estimated cost, and descriptive remarks. Table I, "Area Price Adjustment Factors" gives factors for each state, several cities, other regions, many specific areas in Alaska and Hawaii, other U.S. controlled areas, and foreign countries. The bulk of the value estimation job could be accomplished with the sole use of this document and the IFS assets file. In contrast to the normal situation, the valuation problem would become one of dealing with the surplus rather than the shortage of data. That is, in some cases two or three estimates of value could be developed for a given building and some weighting scheme would be needed to develop a single answer. The unit cost adjustment graph and the regional factors could be applied to the actual costs, bids, and appraisals in order to refine and update any or all of the competing figures. The graph and tables should be adjusted annually so that they continue to reflect actual experience.

The next item is the matter of making allowances for building condition. It is proposed to include in the IFS data base an estimate of the cost for each building to restore it to Condition 1.<sup>1</sup> This is the term "Δ\$" used in the IFS documentation. It is proposed to estimate the current reproduction cost of a building and then to subtract Δ\$ to obtain its gross value.

The last major topic deals with the effects of the passage of time. Once again, the factor approach is proposed. It is recognized that whenever factors or indices are used, many considerations and refinements

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<sup>1</sup> PRC-1209, Facility Condition Field Test and Impact Analysis, Volume VI, Part 2, September 1969

are ignored; however, factors can be used to account for principal effects. The economics of error reduction should be considered in deciding on the factors that should be included in an analysis. Usually the point of diminishing returns is reached in error reduction when the 4 or 5 most important factors are brought to bear. The amount of work spent on developing an estimate should be in keeping with the acceptable size of error. It is expected that specific appraisals will be obtained when considering an important change to a building.

Several time series of construction cost indices are published on a regular basis; one reaches back even to 1868. (See Appendix C for some examples taken from the Statistical Abstract of the United States and a companion volume, Historical Statistics of the United States, Colonial Times to 1957.) If no better basis for evaluation exists, one of these series could be used, together with the original cost and date of construction, to restate the original cost in current value terms.

The matter of depreciation with respect to industrial facilities is treated in DOD Instruction 4100.33. Beginning on page 22 of that document, depreciation times are given for many general asset categories, ranging from 3 years for automobiles to 60 years for grain elevators and warehouses. Since coverage is restricted to industrial facilities, at least these might be written off according to these guidelines, while retaining the possibility of resetting the starting date and value if a major alteration or an appraisal is made.

In contrast, depreciation of assets held by operating forces is not allowed. However, it does seem reasonable to introduce the idea of obsolescence so that the declining suitability of buildings for changing uses can be expressed. Such a factor would not cover, for example, wear and tear and the cost of money, but would be restricted to technical obsolescence. If a factor can be agreed upon, then buildings can be treated as consumables in the sense that a cost per year to provide them can be computed. This would be an essential step in combining military construction and RPMA costs to produce a composite estimate of the facility cost to support a program.

DOD Instruction 4105.2, Uniform Rental Rates For Construction Plant Owned or Controlled and Furnished by a Cost-Plus-a-Fixed-Fee Contractor, contains a precedent for amortizing assets over a period of time. The straight-line amortization approach based on original cost is not used; instead, a value is determined at some starting year, and a declining asset balance is determined for each successive year. Each year the value is diminished by the current value divided by the service life in years. For example, if the service life were 20 years, and the original value equal to \$1,000, at the end of the first year value would be  $19/20$  of the original value, or \$950. At the end of the second year, the value would be  $\$950 \times 19/20$  etc. Each year the cost to supply would be  $1/20$  of the value at the start of the year.

The next obvious step would be to extend the various factors, indices, and values through the period covered by the FYDP. This approach might not be well received by Congress for developing budgets, but the Army and DOD executives should have this information in an organized fashion when laying out their plans.

#### E. Summary Planning Factors

The coordinated development of computational procedures and the associated planning factors is essential for the planning process. The discussion of current assets value was an example of both planning factor and computing procedure development. Application of the readiness concept will require the corresponding development of its planning factors. Since the factors are a part of a procedure, they should be updated periodically if the procedure is to remain useful. One good opportunity for the updating is during the prior year review. While the review is not an executive-level function, the review committee could be given the assignment of updating executive-level planning factors at the same time they do their own. The process should not normally consist of merely substituting the past year's experience for all previous experience, but should give some weight to previous factor values so as to temper the effects of unusual circumstances. Of the several standard updating systems available, such as those used to refine satellite orbital parameters, inventory demand rates, and other statistical time series, probably

the simplest is exponential smoothing coupled with tests to warn the user if the new values depart unreasonably from expectations.

#### IV. Rapid Stationing Analysis

The stationing capability afforded by the IFS design is a more sophisticated and more inclusive capability than that presently afforded by the Stationing Capability System (a pioneer system in the area of facility planning). The increased scope is achieved by expansion of facility types used as criteria for stationing decisions and by expansion of costing considerations, to include RPMA costs. The increased sophistication will provide a variety of options which will permit system operation by incremental steps and will shorten the turnaround time associated with obtaining certain kinds of outputs.

A rapid stationing analysis capability adapted to the needs of the executive level is foreseen as a potentially useful modification of the IFS stationing capability. An example of what is meant by a stationing analysis capability, as opposed to a stationing capability, is as follows:

- Specification of forces in terms of the DOD force categories (Division Forces, Special Mission Forces, and General Support Forces) instead of detailed units of a troop list.
- Specification of facility requirements in gross terms, e.g., number of man-days of construction and/or maintenance/repair effort per 1,000 men of a given force category (somewhat similar to the gross factors of FM 101-10).
- Specification of costs in terms compatible with the foregoing.

Such a capability would be inherently rapid because of its gross character. Its application would not be to the actual or planned stationing of troop units, as is intended for both the SCS and IFS versions, but rather to the function of logistics planning to support strategic operational planning.

The specific nature of such a rapid stationing analysis capability cannot be detailed at this time since its definition will be determined largely as a result of experience gained in use of the basic IFS stationing capability. A significant decision area impacting upon this definition,

for example, is the determination of (1) the relevant criteria to be considered in stationing analyses, and (2) the priority ordering of these criteria.

G. Work Backlog

One of the major concerns at the executive level and in Congress is the consequences of deferring maintenance. This concern is just a small part of the governmental requirement to acquire and sustain an acceptable military capability at some reasonably minimal cost. It is understandably difficult to interest people in spending money on facilities not now in use against the chance that they will be needed later. Congress, which has taken a position that this should be done to some degree in order to protect prior investments, is attempting to use the Maintenance of Real Property Facilities (MRPF) floor as its method of bringing this about. The MRPF is a specific amount of money set aside in the O&MA budget (as a line item) which must be spent on real property maintenance. Discretion is exercised within the services to decide what will be maintained. A BEMAR report is prepared annually by the services showing the total cost of investment protection projects, but there is dissatisfaction with these reports. The basis for deciding what is essential varies widely. The value of the facilities being maintained and net gains or losses in value are not presented. Migrations of facilities into or out of coverage of the report are not noted. The only kinds of perspective information normally associated with the report are listings from previous years of the MRPF and the associated backlogs. Executive attempts to relate the MRPF as a cause of the year end's backlog are frustrated, because the figures that are brought together imply that all the important factors are in front of the executive.

Improvements are possible in several areas. For one, requirements should be broken up as they relate to temporary and permanent structures. PRC has proposed an Unconstrained Requirements Estimate (URE) Report that should provide much of the information currently missing. [See PRC R-1209, Volume 2, Part 3, RPMA Functional Design for the Integrated Facilities System, December 1969, for a much more

complete discussion of the proposed unconstrained requirements report (URR)]. The ability to relate requirements to mission is also required. These could be expressed in terms of either forces to be supported (active and mobilization) or type of facility (family housing, training, life support, industrial production, and maintenance).

Proposed projects could be presented at lower levels on a simplified version of the DD form 1391. The procedure similar to that used for studying new construction project priorities could be used to rank these maintenance and repair proposals. This form should include space to record the disposition of a project and items such as the date of origination, location, a description of the structure to be maintained, and a description of the nature and the scope of the project. Among the dispositions that can be foreseen are completion as specified, change in scope either upward or downward (which might require a resubmission), or abandonment of a project with brief explanation. Considering the amounts of money involved in the aggregate and on a unit basis, the level of detail warranted should at least be equivalent to that needed to requisition a jeep or other materials of equivalent value. Procedures found effective by this supply system for keeping track of transactions could provide a helpful basis for designing the system.

## APPENDIX A

### VISIT LIST

Visit contacts were made with the following offices and persons in assembling data and background for this report. Some contacts involved visits to the PRC offices, but most were visits by PRC personnel. Extensive use was made of telephone contacts and data collected by other groups on the IFS team to conserve time and travel resources.

#### DOD:

ASD Comptroller: W. C. Cronenberg

Joint Bureau of the Budget/Department of Defense  
Hearing on RPMA Budget

JCS: Director J-4 Logistics - Services Division

#### Army:

DCS Comptroller: B. A. Koteen

ASA (I&L): C. W. Colony, G. L. Smith, Lt. Col. F. F. Irving

Office of the Deputy Secretary of the General Staff -  
Administration Division

Assistant Vice Chief of Staff of the Army:  
Lt. Col. H. E. Strickland, Jr., Maj. H. M. Reed II

DCS LOG Directorate of Installations  
IFSO: Lt. Col. G. B. Shaffer, Maj. W. H. Perrin  
Construction Div.: A. M. Carton  
Installations Management Div.: W. M. Lockwood,  
Col. D. A. Hawkins, G. M. Gordon  
RPMA Office: R. H. Holmes

Aberdeen Proving Ground: Mr. Gibson (Comptroller),  
Mr. Salmon (Post Engineer)

## APPENDIX B

### STANDARD EXECUTIVE LEVEL REPORTING REQUIREMENTS

This appendix covers various aspects of formal executive-level information regarding facilities.

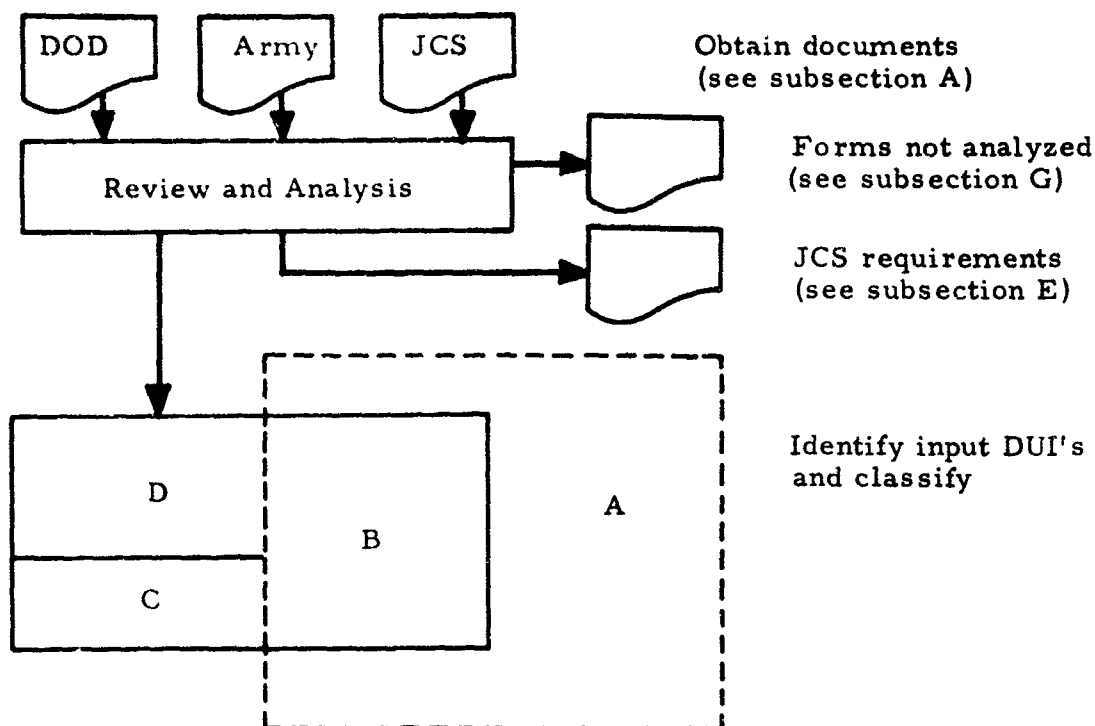
Exhibit B-1 outlines the procedures and method of partitioning the executive level information among the subsections of this appendix. Briefly, DOD, Army, and JCS documents were screened for facility-oriented information going to executive level addressees. Some judgment was used in choosing the requirements that would be analyzed further and those that would merely be presented. The criteria were mainly concerned with the desirability of automated support of the subject report. Those not supported entirely by automation can still be part of the data available within IFS on a hardcopy or other manual basis.

The method of classifying and presenting the basic input data is outlined in Exhibit B-1.

A DOD Directives System Listing, 31 December 1968, and AR 335-11, List of Approved Recurring Reports, 1 May 1968, were screened for directives and similar documents bearing on facilities. A copy of each document was obtained and examined to determine if facility information was required by an addressee above the DCS level. Subsection A is a listing of the documents and any forms or formats prescribed. As with the other listings in this appendix, the standards for inclusion were quite liberal in order to reduce the chance of missing items. As a result, the relevance of several entries may be in question.

Selected forms and information requirements were then analyzed to determine the input DUI's. These are shown in subsection B. Loosely speaking, DUI refers to the name of a box on a form which contributes in some way to a description of the subject, for example, "Installation Name." (The identifying number of a form type is not considered a DUI.) It became evident very rapidly that a simple





$B + C + D$  = "input" DUI's needed to meet analyzed executive requirements (see subsection B)

D = DUI's not covered by Phase IIB IFS DFSR (see subsections C and D)

B = executive level input DUI's which are the same as those needed below the executive level

C = executive level DUI's not needed for work below the executive level but included to meet reporting requirements

A = DUI's in IFS, not needed for executive reports

$A + B + C$  = DUI's in Phase IIB IFS DFSR

## EXHIBIT B-1 TASK PROCEDURE AND DATA PARTITIONING

listing of form entries for these reports would not be useful to IFS designers because some merely call for rearrangement of the same basic information needed to satisfy other reports. Hence, a least-common-denominator approach was used in the analysis. The result is a listing of input DUI's from which the entries on the various reports (output DUI's) can be produced. This listing of input DUI's is designed to meet executive level needs. Some of them may have to be broken out further to meet the needs of the primary IFS users. DUI's not planned for inclusion in the IFS DFSR design are marked with an X. Most gaps are in the requirements area (major section 2), some in the DD8-13 series of forms on construction cost analyses, and some in the Family Housing area. Some of the forms covered were simply copied and added at the back of subsection B, as the forms show more clearly what is wanted than an input DUI listing.

Subsection C contains a list of the DUI's not covered. Subsection D is a collection of the forms containing DUI's not covered. The missing DUI's are encircled. Other missing data may come from feeder systems, especially Family Housing. JCS requirements were also examined and converted to DUI's; these are listed separately in subsection E for future reference only, because JCS interests are primarily overseas, while the current IFS design is restricted to CONUS coverage.

Subsections B, C, and E are arranged in a hierarchical fashion to achieve some efficiency in identifying DUI's. Neither time nor resources permitted identifications beyond the level presented. However, references are provided as starting points for any necessary further research. The primary research tools should be a set of the forms and formats listed in subsection A.

Subsection F lists the formal reports called for in subsection A, the submitting and receiving agencies, the frequency, and the as-of and submission dates, where these were provided in the directives. The dates show the response time requirement for the formal reports.

Subsection G, a collection of forms from documents listed in subsection A but not converted to DUI's in the subsection B listing, is included in an attempt at completeness. Though all forms have executive level addressees or originate at DOD, some are of doubtful interest to executives while others are so specialized that it would be more efficient to store them directly in hardcopy form than to integrate them in the IFS data base.

A. List of Directives, Instructions, and Forms Examined  
For Executive Level Interest in Facilities Information

An asterisk indicates that the information requirements (except those items requiring narrative) were converted to data use identifiers.

<u>Identification</u>	<u>Title</u>	<u>Date</u>
DOD Dir. 1225.5	Reserve Forces Facilities Projects	Sept. 7, 1967
*DD Form 1405	Dept. of Defense Reserve Forces Facilities Status Report of Major Construction Program	
*DD Form 1406	Dept. of Defense Reserve Forces Facilities Report of Minor Construction, Restoration of Damage and Repair Projects	
*Format A	Dept. of Defense Reserve Forces Facilities Summary of Authorization Status of Major Construction Programs Reported on Attached DD Forms 1405 for the Period _____	
DOD Dir. 3005.2	Non-Industrial Facilities for Mobilization	Dec. 7, 1964
*none	Non-Industrial Facilities for Mobilization	
DOD Instr. 4005.15	Industrial Readiness Planning Program	July 14, 1959
DD Form 1519	Emergency Production Schedule	
DOD Instr. 4100.33	Commercial or Industrial Activities - Operation of	July 22, 1966
*none	Cost Analysis Worksheet	

Note: Official DD forms have dates of origination or most recent revision of format. Formats (e.g., Format A) are suggestions of arrangement and content, but do not have the official status of a numbered DD form and are not dated.

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*none	Inventory for Fiscal Year - Covering Commercial or Industrial Activities Oper- ated and Managed by Dept. of _____ (or Agency); Contract Support Services  Produced from Private Com- mercial Sources by Dept. of _____ (or Agency)	
*none	List of the Respective Func- tional Areas which Comprise all DOD Commercial or In- dustrial Activities and all DOD Contract Support Services	
DOD Instr. 4105.1	Reports on Defense Procurement	May 18, 1967
DOD Instr. 4105.2	Uniform Rental Rates for Construction Plant Owned or Controlled and Furnished by a Cost-Plus-Fixed-Fee Con- tractor or by a Cost-Plus- Fixed-Fee Subcontractor	Aug. 9, 1956
DOD Dir. 4105.56	Uniform Standards for the Selection of Architect - Engi- neer Firms for Professional Services	Oct. 4, 1962
*none	Dept. of the _____ Quarterly Report of A-E Con- tract Awards over \$100,000 for Military Construction ____ Quarter CY 19____	
DOD Instr. 4140.18	Management and Transaction Reports for Materiel Assets	Dec. 15, 1965
DD Form 1138	Changes in Appropriation Fi- nanced Inventories	
DD Form 1138-1	Stratification Report of Prin- cipal Items	
DD Form 1138-2	Stratification Report of Sec- ondary Items	
DOD Instr. 4145.5	Space Utilization and Occu- pancy Report (DD Form 805)	June 19, 1967
*DD Form 805	Storage Space Utilization and Occupancy Report	

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*none	(no title) Format is to be used as guide in reporting entries in lines 3, 11, 12, 13, 14 of DD Form 805	
DOD Dir. 4145.16	Commercial Warehousing and Related Services for Household Goods of Military and Civilian Personnel of DOD	Sept. 13, 1961
*DD Form 1166	Report of Household Goods Storage Activities	
DOD Instr. 4150.9	Annual Report on Real Property Maintenance Activities	Mar. 29, 1966
none	Format for Report of Real Property Maintenance Activities	
DOD Instr. 4165.12	Prior Approval of Real Property Actions	Feb. 6, 1967
Sample Format No. 1	Acquisition Report	
Sample Format No. 2	Disposal Report	
DOD Instr. 4165.14	Inventory of Military Real Property	Dec. 21, 1966
*FORMAT	Summary Inventory Data of Military Real Property by Construction Categories	
*FORMAT	Summary Inventory Data of Military Real Property by Location	
*FORMAT	Number of Installations by Type and Location	
*FORMAT	Inventory Changes During Fiscal Year	
*FORMAT	Inventory of Military Real Property - Installation Summary	
*none	Listing of Individual Leases Not all or Part of an Installation	
DOD Instr. 4165.17	Report of Fire Loss Experience Within the Department of Defense (DD-P & I (A) 209)	June 17, 1955
DOD Instr. 4165.25	Fuel Selection	Apr. 22, 1964

<u>Identification</u>	<u>Title</u>	<u>Date</u>
none	Estimated Cost Comparison of Heating or Power Plant Fuel Conversion	
DOD Instr. 4165.27	Provision of Family Housing for Essential Civilians Employed at Military Research or Development Installations	Aug. 8, 1968
DD Form 1158	Certificate of Need for Family Housing for Essential Civilian Employees of the Armed Forces	
DD Form 1159	Application For and Certificate of Employee Eligibility	
DD Form 1321	Report on Provision of Family Housing Under Section 809 of the National Housing Act for Essential Civilians Employed at Military Research or Development Installations	
DOD Instr. 4165.28	Outleasing of Land for Agricultural Use	May 24, 1963
DOD Dir. 4165.38	Private Rental Housing for Military and Essential Civilian Personnel	Jan. 20, 1962
none	Annual Report on Section 810 Housing Program	
DOD Instr. 4165.39	Criteria for Improvement, Replacement, Retention, and Disposition of Substandard Family Housing	Sept. 22, 1964
none	Justification for Retention of Substandard Housing	
DOD Instr. 4165.40	Form for Transfer and Acceptance of Military Real Property (DD Form 1354)	Nov. 14, 1961
*DD Form 1354	Transfer and Acceptance of Military Real Property	
DOD Instr. 4165.41	Nonutilization of Military Real Property	Dec. 18, 1961
*DD Form 1364	Nonutilization of Military Real Property (as of 31 Dec. 19____)	
DOD Instr. 4165.42	Establishment of Charges for Quarters & Related Facilities	Oct. 18, 1965

<u>Identification</u>	<u>Title</u>	<u>Date</u>
none	Disposition of Collections for Rents and Charges	
DOD Instr. 4165.45	Military Family Housing Requirements Program	June 9, 1965
*DD Form 1410	Inventory and Occupancy of Military Owned and Controlled Family Housing Units	
*none	Personnel Summary	
*none	Statement of Vacant Adequate Military Housing (Military Owned, Leased, and Sponsored)	
DD Form 1376	Questionnaire on Family Housing	
DD Form 1377	Tabulation of Family Housing Survey	
DD Form 1378	Determination of Housing Requirements and Project Composition	
DD Form 1523	Military Family Housing Justification	
none	Summary of Available Vacant Rental Housing	
DOD Instr. 4170.6	Natural Resources - Fish & Wildlife Management	June 21, 1965
FORMAT B	Installation FY_____ Fish and Wildlife Report	
FORMAT C	FY_____ Fish and Wildlife Summary Report from Department of _____	
DOD Instr. 4170.7	Natural Resources - Forest Management	June 21, 1965
SUGGESTED FORMAT A	Forest Resource Management Report FY_____	
DOD Instr. 4170.8	Natural Resources - Soil and Water Management	June 21, 1965
none	Annual Report FY_____ Department of the Soil and Water (Land Management) Conservation Program	
DOD Dir. 4200.1	Materiel Planning Study, DD Form 764	Feb. 11, 1959



<u>Identification</u>	<u>Title</u>	<u>Date</u>
DD Form 764	DCL Materiel Planning Study	
DOD Instr. 4215.13	Leasing of Government Owned Production Equipment	Mar. 21, 1958
DOD Instr. 4270.10	Report of Construction Costs	June 3, 1963
*DD Form 813	Report of Cost and Analysis - Buildings	
*DD Form 813-1	Report of Cost and Analysis Liquid Fuel and Dispensing Facilities and Liquid Fuel Storage	
*DD Form 813-2	Report of Cost and Analysis - Paving	
DOD Dir. 4270.24	Operations and Maintenance Facilities Program - Minor Construction Program - Programming Review and Reporting Procedures	June 30, 1961
*Format A	Sample Departmental Summary/Cover Sheet Department of the Air Force Report on Minor Construction for the Period _____ 196__ to _____ 196__	
*Format B	Sample Report by Installation Department of the Air Force Project Listing - Minor Construction for the Period _____ to _____	
*Format A	Sample Summary/Cover Sheet Department of the Air Force Report on O&M Facilities Program (other than Family Housing) for the Period _____ to _____	
*Format B	Sample Report by Installations Dept. of the Air Force Project Listing - O&M Facilities Program (other than Family Housing) for the Period _____ to _____	
DOD Instr. 5000.8	Glossary of Terms Used in the Areas of Financial, Supply, and Installation Management	June 15, 1961

<u>Identification</u>	<u>Title</u>	<u>Date</u>
DOD Instr. 5100.37	Delegation of Authority to Approve Family Housing Projects Performed Pursuant to 10 U.S.C. 2674	Jan. 23, 1963
DOD Dir. 7040.2	Program for Improvement in Financial Management in the Area of Appropriations for Acquisition and Construction of Military Real Property	Jan. 18, 1961
* one	Certificate of Urgency, Minor Construction Projects Undertaken Under Authority of Section 2674, Title 10, United States Code	
*none	Certificate of Cost Incurred, Minor Construction Projects Undertaken Under Authority of Section 2674, Title 10, United States Code	
DOD Instr. 7040.4	Military Construction Authorization & Appropriations	Oct. 25, 1962
*DD Form 1390, 1390C	FY 19____ Military Construction Program	
*DD Form 1390S	FY 19____ Military Construction Program, Reserve Forces Supplemental Data	
*DD Form 1391, 1391C	Military Construction Line Item Data	
DOD Instr. 7040.5	Definitions of Expenses and Investment Costs	Sept. 1, 1966
DOD Instr. 7041.3	Economic Analysis of Proposed DOD Investments	Dec. 19, 1966
*Format A	Economic Evaluation - DOD Investments	
Format B	Economic Evaluation - DOD Investments, Detail of Benefits	
DOD Instr. 7045.7	Review and Approval of Changes to the Five-Year Defense Program	Dec. 22, 1967
DOD Manual 7110.1-M	Manual for Preparation of Budget Estimates, Operating Budgets, Financial Plans and Apportionment Requests, and Related Support Material	Aug. 23, 1968

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*none	Fund, Reconciliation of Annual Budget with FYDP, FY _____	
none	Maintenance and Operation of Real Property Operating Budget or Appropriation _____	
*none	Operation and Maintenance of Facilities	
DOD Instr. 7150.3	Apportionment of Public Works Funds	May 29, 1957
*FORM A	Military Construction Projects Summary Fiscal Year 19_____	
*FORM E	Military Construction Installation Summary	
*FORM C	Military Construction Departmental Summary	
*FORM D	Military Construction - Program and Cost Report for the Fiscal Year Ending June 30, 19_____	
DOD Instr. 7220.10	Procedures for Payment of the General Services Administration for Materiel Ordered from the General Supply Fund and for Related Supply Support Services for Overseas Shipments	June 11, 1962
DOD Instr. 7220.16	Cost Accounting and Reporting for Operation and Maintenance of Military Family Housing	May 18, 1964
*Format A	Family Housing Operation & Maintenance Cost Report	
DOD Instr. 7500.1	Report on Real and Personal Property and Selected Financial Assets	Aug. 19, 1966
*Format 1	Cost and Rentals of Military Real Property Controlled Department of the _____ as of 30 June _____	

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*Format 2	Acreage of Military Real Property Controlled and Located at Installations, Department of the _____ as of 30 June _____	
*Format 3	Cost to United States Government of Land Controlled, Department of the _____ as of 30 June _____	
*Format 4	Cost and Rentals of Military Real Property Controlled United States, Department of the _____ as of 30 June _____	
*Format 5	Acreage of Military Real Property Controlled at Installations United States, Department of the _____, as of 30 June _____	
*Format 6	Military Real Property Controlled at Installations, by State in the United States, Dept. of the _____ as of 30 June _____	
*Format 6A	Listing of Public Domain Land, by State and Installation Controlled by Department of the _____ as of 30 June _____	
*Format 6B	Listing of Donated Lands by State and Possession Controlled by Department of the _____ as of 30 June _____	
*Format 7	Military Real Property Controlled at Installations in Possessions, Dept. of the _____ as of 30 June _____	
*Format 8	Military Real Property Controlled at Installations in Foreign Countries, Dept. of the _____ as of 30 June _____	

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*Format 9	Fifteen Largest Categories of Military Real Property Controlled, Dept. of the _____ (Geographical Area) as of 30 June _____	
*Format 10	Cost to United States Government of Military Real Property Controlled by Facility Class, Dept. of the _____, as of 30 June _____	
*Format 13	Military Construction in Progress (Work in Place), Dept. of the _____ as of 30 June _____	
*Format 14	Selected Financial Assets, DOD Component _____ as of 30 June _____	
*Format 15	Civil Works Property Department of the Army as of 30 June _____	
*Format 16	Inventory of Procurement Source Government - Provided Material, Dept. of the _____ as of 30 June _____	
DOD Instr. 7700.4	Reporting Requirements of the DOD Program of Contractor Performance Evaluation (Development and Production)	Dec. 7, 1965
DOD Instr. 7720.5	Progress Report on Military Family Housing Projects	Oct. 1, 1962
*DD Form 1398	Progress Report of Military Family Housing Project	
DOD Instr. 7730.20	Inventory and Utilization Reporting on Military Family Housing	Dec. 31, 1963
*DD Form 1410	Inventory and Occupancy of Military Owned and Controlled Family Housing Units	
*DD Form 1411	Statement of Facilities and Assignment	

<u>Identification</u>	<u>Title</u>	<u>Date</u>
DA Pam 37-6	Accounting and Reporting Procedures Manual for Project Prime Under Resource Management Systems	Jan. 1969
AR 210-3	Reactivation of Facilities, Maintenance and Protection of Real Property, and Operation of Utilities During Mobilization	
AR 210-20	Master Planning for Permanent Army Installations	May 1968
DA Form 2368-R	Building Information Schedule	
DA Forms 2369-R & 2369-1-R, and 2369-2-R	Tabulation of Existing and Required Facilities for Long-Range Planning	
AR 210-50	Family Housing Management	Aug. 7, 1964
*DA Form 2576-R, 2576-1-R, 2576-2-R, 2576-3-R	Personnel Occupying Army Family Housing	
*DA Form 2866	Family Housing Repair and Improvement Projects Report	
AR 405-5	Army and Air Force Basic Real Estate Agreements	Sept. 5, 1950
AR 405-10	Acquisition of Real Property and Interests Therein	May 28, 1962
AR 405-15	Real Estate Claims Founded Upon Contract	Sept. 6, 1967
AR 405-20	Federal Legislative Jurisdiction	June 28, 1968
AR 405-45	Inventory of Military Real Property	Sept. 15, 1966
*DA Form 2541	Installation Inventory of Military Real Property	
*DA Form 2014-R	Army Leaseholdings in Foreign Countries Separate from Installations	
AR 405-70	Utilization of Real Estate	Mar. 11, 1965
AR 405-80	Granting Use of Real Estate	Aug. 9, 1965

<u>Identification</u>	<u>Title</u>	<u>Date</u>
*AR 405-90	Disposal of Real Estate	Dec. 23, 1965
AR 415-10	Construction: General Provisions	Feb. 9, 1965
AR 415-11	Air Force Contract Construction	Mar. 29, 1955
AR 415-14	Implementing Guarantees of Equipment Installed in Air Force Construction	Oct. 30, 1963
AR 415-15	MCA Program Development	Mar. 22, 1962
*DA Form 726	Installation Long-Range and Command Intermediate-Range Construction Programs	
*DA Forms 1674-R and 1674-1-R	Installation Construction Program	
*DA Forms 1675-R and 1675-1-R	Construction Item Description and Justification	
*DA Form 2530-R	Command Short-Range Construction Program	
AR 415-15 (Draft)	MCA Program Development	Feb. 18, 1969
DD Form 1390, 1390C	FY _____ Military Construction Program	
DD Form 1391, 1391C	FY _____ Military Construction Line Item Data	
AR 415-16	Engineer Functional Components System (Theater of Operations Construction Planning)	Dec. 6, 1965
AR 415-17	Empirical Cost Estimates for Military Construction and Price Adjustment Factors	June 22, 1967
AR 415-20	Construction: Design Approval	Feb. 20, 1969
*AR 415-22	Protection of Petroleum Installations and Related Facilities	Aug. 11, 1966
AR 415-25	Real Property Facilities for Research, Development, Tests, & Facilities	Nov. 9, 1962

<u>Identification</u>	<u>Title</u>	<u>Date</u>
AR 415-28	Department of the Army Facility Classes and Construction Categories	Oct. 17, 1967
AR 415-30	Troop Construction for the Air Force	July 26, 1965
AR 415-31	Basic Facilities and Space Allowances for Peacetime Missions at Army Installations	Feb. 21, 1967
*DD Form 1391	Military Construction Line Item Data	
AR 415-32	Performance of Military Construction Projects in the Continental United States by Troop Units	Jan. 23, 1967
AR 415-35	Minor Construction	Aug. 5, 1966
*DD Form 1391	Military Construction Line Item Data	
*none	Certificate of Cost Incurred, Minor Construction Projects Undertaken Under Authority of Section 2674, Title 10, U.S. Code	
AR 415-36	Peacetime Planning and Construction in Oversea Base Rights Areas Garrisoned on Temporary Basis	Mar. 17, 1969
AR 415-50	Conterminous U.S. Basic Facilities and Space Allowances for Construction at Installations in Event of Emergency	Aug. 31, 1964
AR 420-10	Post Engineering - General Provisions	Sept. 7, 1967
AR 420-11	Post Engineering Staff Visits	Oct. 28, 1966
AR 420-13	Organization, Functions, and Utilization of Personnel	Aug. 28, 1967
AR 420-14	Temporary Increases in Civilian Personnel Authorization to Accomplish Work for Others	Oct. 26, 1967
AR 420-16	Technical Data Report (Reports Control Symbol ENG - 94(R5))	Aug. 5, 1966



<u>Identification</u>	<u>Title</u>	<u>Date</u>
DA Forms 2788, 2788-1, 2788-2, 2788-3	Repairs and Utilities Techni- cal Data	
AR 420-17	Work Management	Jan. 2, 1968
AR 420-19	Mobile Equipment Rental	Feb. 27, 1967
AR 420-20	Real Project Facilities Project Estimate	Feb. 15, 1967
*DD Form 1391	Military Construction Line Item Data	
AR 420-21	Special Projects Report (Re- ports Control Symbol DD - I & L (S/4) 431)	Sept. 2, 1967
*DA Form 2867	Repairs and Utilities - Spe- cial Projects Report	
AR 420-22	Preventive Maintenance	Nov. 7, 1966
AR 420-24	Self-Help Program	Apr. 27, 1965
AR 420-30	Supplies	Aug. 24, 1966
AR 420-31	Stock Control	Feb. 9, 1965
AR 420-32	Warehousing	May 31, 1966
AR 420-40	Solid Fuels Purchase Re- quests (DD Form 416, Requi- sition for Coal, Coke, or Briquettes)	Sept. 23, 1963
AR 420-41	Utilities Contracts	Apr. 30, 1958
AR 420-42	Solid Fuels	Feb. 8, 1966
AR 420-43	Electric Services	Aug. 19, 1965
AR 420-44	Utilities Utilization (Program) and Command Analysis of Utilities Operations	July 29, 1966
*DA Forms 2869, 2869-1, 2869-2	Command Analysis of Utilities Operations	
AR 420-46	Water and Sewerage	Oct. 8, 1965
AR 420-47	Standards and Procedures for Refuse Collection and Disposal	Sept. 18, 1967
AR 420-49	Heating and Plumbing	May 14, 1969
AR 420-50	Fuel Selection	May 14, 1969
AR 420-52	Operating Logs	Feb. 17, 1967

<u>Identification</u>	<u>Title</u>	<u>Date</u>
AR 420-53	Refrigeration	Apr. 13, 1965
AR 420-54	Air-Conditioning, Evaporative Cooling Dehumidification, and Mechanical Ventilation	June 11, 1965
AR 420-55	Food Service and Related Equipment	Dec. 10, 1957
AR 420-56	Permanently Installed Petroleum Products Storage, Distribution, and Dispensing System	Apr. 12, 1961
AR 420-57	Repair Limits; Refrigeration and Mechanical Kitchen Equipment	Dec. 6, 1967
AR 420-58	Occupant - Owned Household Appliances	Dec. 23, 1964
AR 420-62	Utility Service Contracts	Apr. 30, 1958
AF 120-70	Buildings and Structures	Feb. 3, 1955
AR 420-71	Leased Premises	Jan. 20, 1967
AR 420-72	Surfaced Areas	Feb. 24, 1969
AR 420-73	Utility Railroad Trackage	Aug. 25, 1964
AR 420-74	Natural Resources - Land, Forest, and Wildlife Management	June 27, 1966
AR 420-76	Entomology Services	Apr. 22, 1966
DD Form 1532	Pest Control Summary Report	
AR 420-78	Precautions in Applying Insecticidal Aerosols and Vapors in Buildings and Structures	Nov. 13, 1962
AR 420-79	Packing and Crating	July 20, 1962
AR 420-80	Sale and Furnishing of Utilities Services	Mar. 28, 1967
AR 420-81	Custodial Services	June 15, 1967
AR 420-82	Shop Facilities	Mar. 24, 1967
AR 420-83	Post Engineering Maintenance and Services Equipment	July 21, 1959
AR 420-90	Fire Prevention and Protection	July 2, 1958

<u>Identification</u>	<u>Title</u>	<u>Date</u>
AR 420-94	Fire Protection for Electronic Digital Computers and Recorded Data	Mar. 7, 1964
AR 500-72	Survey, Utilization, Marking, and Stocking of Protective Shelter areas on Military Installations	May 2, 1967
*DA Cir 415-6	Minor Construction Projects-- Evaluation of Flood Hazards	Mar. 31, 1967
DA Cir 420-17	Fire Prevention and Protection, Military Gasoline Cans	Jan. 20, 1966
DA Cir 420-22	Backlog of Essential Maintenance and Repair	Mar. 20, 1967
DA Cir 420-32	Maintenance of Real Property Facilities (MRPF) Data for Support of FY 1971 Budget & Future Programs Reports Control Symbol OSD-(OT)-1546	Aug. 26, 1969
*none	FY _____ Maintenance of Real Property Facilities (MRPF) Operation and Maintenance, Army	
*none	Operation and Maintenance, Army, Long Range Work Plans FY 1972 - FY 1975	

**B. Executive DUI Requirements Plus Selected Additional Forms**

This subsection contains a listing of DUI's; also included are the following forms:

- |     |                   |  |
|-----|-------------------|--|
| 1.  | DODI 4150.9       | Format for Report of Real Property Maintenance Activities  |
| 2.  | DOD Dir. 7110.1-M | Maintenance and Operation of Real Property   |
| 3.  | DA 2788           | Repairs and Utilities Technical Data Part I - Summary  |
| 4.  | DA 2788-1         | Repairs and Utilities Technical Data Part II - Utilities (Except Heating)  |
| 5.  | DA 2788-2         | Repairs and Utilities Technical Data Part III - Utilities - Heating  |
| 6.  | DA 2788-3         | Repairs and Utilities Technical Data Part IV - Buildings and Grounds Activities, Minor Construction, and Other Engineering Support |
| 7.  | DA 2869           | Repairs and Utilities Command Analysis of Utilities Operations Part I - Operating Data   |
| 8.  | DA 2869-1         | Repairs and Utilities Command Analysis of Utilities Operations Part II - Utilization Program                                       |
| 9.  | DA 2869-2         | Repairs and Utilities Command Analysis of Utilities Operations Part III - Narrative Review   |
| 10. | DA Cir 420-32     | FY_____ Maintenance of Real Property Facilities (MRPF) Operation and Maintenance, Army   |

### Outline of Major Sections

- 1 General
- 2 Requirements
- 3 Investment
- 4 Operations and maintenance

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
1	General	
1.0	Effective date (of installation reference data)	
1.1	Installation/"non-installation" data	
1.1.1	Name, identification codes	
	Name	
	Army control number (ACN)	
	Other control numbers (e.g., DOD installation identification code)	X
	Division code	
	District code	
1.1.2	Location	
	County	
	Congressional district	
	State	
	Country/possession	
	Army area	
	Office of Emergency Preparedness Region	X
1.1.3	Command	
	Command or management bureau	
	(DOD) Department (i.e., Army)	
	Reserve Component	
	MAFC	

\*An "X" in this column means that this DUI is not currently planned for inclusion in the IFS DFSR.



	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
2	Requirements	
2.1	ACN (crossover to i)	
2.EY.1	General (EY <sup>1</sup> and FY <sup>1</sup> = 68, 69, etc.)	
	As-of date	
	Data, source/authority of data	
	Data type (current/proposed/ programmed, etc.)	
2.EY.2	Tenants/users/operators, incl. joint agencies	
2.EY.2.1	Name/control code, command echelon data	
	Program element title, code	
2.EY.2.2	Full strength (T/O)	
	Reference document (TOE, TDA, contract, etc.)	X
	Strength: active:	
	officer, WO, enlisted (by grade), major equipment/aircraft (O, E, ME/A)	
	Civilian:	
	U.S. direct hire, foreign direct hire, contract (C)	X
	Supported:	
	O, E, ME/A, C, others (e.g., families)	
	Reserve:	
	O, E, ME/A	
	Students	
	O, E, C, by 20 weeks or more, less than 20 weeks, grade	X
	BAQ authorized, by grade	X

<sup>1</sup>EY = End Fiscal Year.  
FY = Fiscal year.  
PE = Period Ending (Julian Date).

	<u>Date Use Identifier (DUI)</u>	<u>Not Covered*</u>
2.EY.2.3	Authorized	
	Reference document (TOE, TDA, contract, etc.)	X
	Strength: active: (O, E, ME/A)	
	Civilian:	
	U.S. direct hire, foreign direct hire, contract (C)	X
	Supported:	
	O, E, ME/A, C, others (e.g., families)	
	Reserve:	
	O, E, ME/A	
	Students:	
	O, E, C, by 20 weeks or more, less than 20 weeks, ,	X
	BAQ authorized, by gra	X
2EY.2.4	Actual/assigned	
	E-4 with 4 years	X
	E-4 with less than 4 years	X
	Reference document (TOE, TDA, contract, etc.)	X
	Strength: active: (O, E, ME/A)	
	Civilian:	
	U.S. direct hire, foreign direct hire, contract (C)	X
	Supported:	
	O, E, ME/A, C, others (e.g., families)	
	Reserve:	
	O, E, ME/A	



	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
	Students:	
	O, E, C, by 20 weeks or more, less than 20 weeks, grade	
	BAQ authorized, by grade	X
	Family Housing (FH) housing population	
2.EY.2.5	Mobilization strength	
	O, E, C, other	
2.EY.2.6	Long range strength	
	O, E, C, other	
2.EY.2.7	Frequency and/or type of utilization	X
2.EY.3	Permanent party	
2.EY.3.1	Identification and command echelon data	
2.EY.3.2	Full strength (T/O)	
	O, E, C, supported, major equipment/ aircraft	
2.EY.3.3	Authorized	
	O, E, C, S, ME/A	
2.EY.3.4	Actual	
	O, E, C, S, ME/A	
2.EY.3.5	Mobilization strength	
	O, E, C, other	
2.EY.3.6	Long-range strength	
	O, E, C, other	
2.2	Facility utilization planning factors	X
3	Investment (construction)	
3.1	General	
	ACN (crossover to 1)	
3.2	Guidance	
	Document title, date, authority, program element	
	Projects/line items	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.2	Guidance (cont.)	
	Nature of guidance: approved, authorized, funded, revision	
	Guidance data: FY, amount	
	State reserve facilities board recommendation, date	X
	Gross contingency estimate:	X
	Prior cumulative FY estimate	X
	Proposed revision by Military Dept.	X
	Proposed revision by OSD	X
3.3	Project/line item	
3.3.1	General	
	Project title (temporary, if appropriate)	
	Project number (temporary, if appropriate)	
	As-of date	
	Date of submission	
	Submission no./post request no.	X
	FC & CCC (crossover to 3.4)	
	Related line items	
	Responsible (Army) office	
	Program element no. (crossover to 2.EY.2.1)	
	Budget account no.	
	Appropriation	
	Replacement	
	Type of work	
	Description of work	
	Work class	
	Major fund identification (MILCON, OMA, PEMA, RDT&E)	
	Basis of requirement (petroleum facil. -- support or reserve)	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.3.1	General (cont.)	
	Type of protection desired (petroleum facil.)	X
	Evaluation of flood hazards	
	FH program and subprogram	X
	Urgency reasons	
	Unusual factors which cause high est. cost	
3.3.2	Quantitative data	
	Total requirement	
	Existing, substandard	
	Existing, adequate	
	Authorized, not yet in inventory	
	Funded	
	Unfunded	
	Funded, not in inventory	
	Funded, included in FY-program	
	Authorized, unfunded in prior authorizations	
	Authorized, included in FY-program	
	Funding available	
	MCA/non-MCA funded	
3.3.3	PPBER	
	Approved by	
	Approving authority	
	Date: Proposed start } through next Proposed completion } 4 FY's	
	Approved	
	Funded	
	Started	
	Physically completed	
	Financially completed	
	Estimated time between receipt of approval and start of work	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.3.3	PPBER (cont.)	
	Current priority	
	Public Law	
	Scope:	
	Authorized	
	Authorization program (same as quantity)	
	Net requirement	
	Valid auth. not in inventory	
	Net deficit	
	Current request	
	Funding program	
	Current working estimate (CWE)	
	OSD adjustment	X
	(FH) date design directive issued	X
	% physically complete	
	Financing (\$ amount, by FY):	
	Authorization program \$:	
	Valid auth. not in inventory	
	Net deficit	
	Current request	
	Authorized	
	Funding program:	
	Funds available	
	Net deficit	
	Current request	
	Scope	
	Estimated cost	
	Proposed funding	X
	OSD adjustment	X

Data Use Identifier (DUI)

Not  
Covered\*

Current Working Estimate:

Funded cost

Unfunded cost

Cost incurred

Approved funded cost

Approved funded design cost

Approved design cost

Estimated to complete

Total cost to date

Program change decision action number

Work method: contract, Post Engineer,  
purchase and hire, troop project

X

Excess funds from work funded from  
mil. constr. appropriation

Quantities and unit cost for:

Materials

Labor

Equipment use

Contractor's bond insurance

X

Overhead

X

Profit

X

3.3.4

Contract data

Invitation/specification no.

X

Title (of inv. or spec.)

X

Type of contract

X

Number of bidders

X

Dates:

Bid opening

X

Award (actual)

Contract negotiated

X

Award (scheduled)

Completion (scheduled)

Completion (actual)

X

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.3.4	Contract data (cont.)	
	(F.H.) first occupancy date	X
	(F.H.) full occupancy date	X
	A-E contract no.	
	Contract no.	
	Job no.	X
	Serial no.	X
	Name and location of A-E firm	X
	Name of co. with which contract was placed	X
	Contract amount	
	Reason contract awarded w/o formal advertising	X
	Construction period	
	(F.H.) three lowest bids	X
	Number of buildings	
	Number of identical buildings	X
	Total gross sq. ft. of buildings	
	Complete project low bid	X
	Complete project budget	X
	Complete project gov't estimate	X
	Individual facility low bid	X
	Individual facility budget	X
	Individual facility gov't estimate	X
	Cost based on award, total \$:	
	Individual facilities	X
	GFE and material (facil.)	X
	Contingencies (facil.)	X
	Planning (facil.)	X
	Overhead (facil.)	X
	A-E design (facil.)	X
	A-E supervision (facil.)	X

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.3.4	Contract data (cont.)	
	Individual item (e.g., utilities, site impr.)	X
	Heating plant and/or heat distribution	X
	Contingencies. planning, overhead	X
	A-E design	X
	A-E supervision	X
	Paving total item cost of:	
	Wearing surface	
	Base course	
	Subbase course	X
	Excavation and grading	X
	Drainage and other work	X
	Type of transaction:	
	New constr.	
	Existing fac.	
	Capital imp.	
	Other	
	Transfer at time of:	
	Beneficial occupancy	X
	Physical completion	X
	Financial	X
	Other	X
	Transferred by	
	Date transferred	X
	Accepted by	
	Date accepted	X
	Construction deficiencies	X
3.4	Facility	
3.4.1	General	
	Planned disposition	
	FC & CCC	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.4.1	General (cont.)	
	Name (category description)	
	Report date	
	Principal use (sole, primary, multiple)	
	Property voucher no.	X
	Working drawing no.	X
	Drawing no. (official record)	
	Project or line item title & no. (cross-over to 3.3)	
	Building or facility number (for property, accountability)	
	Address - on post/off post	
3.4.2	Legal	
	Entitlement basis/ownership code (how acquired)	
	Easement	
	Leased	
	Owned	
	Permitted	
	Rented	
	Sponsoring agency/service	X
	Order of possession	X
	Fee title	X
	Transfer	X
	Pub. domain	X
	Current entitlement status (joint, out-granted, occupied)	X
	Date of initial occupancy/acquisition/yr. built	
	Legal instrument data: contract no., terminal date	
	Date of sale/disposal/loss/conversion	
	Occupant ID. (using agency) or vacant transferee	X



	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.4.2	Legal (cont.)	
	Change code	X
	Date available (real estate)	X
	Reason available	X
	Contractual commitments	X
	No. persons who will lose jobs	X
	Cemeteries	
	Clearance of explosives	X
3.4.3	Cost/value	
	Initial value or cost to U.S. Government	
	Improvement cost	
	Est. value (of non-Gov't owned property)	
	Current annual rental cost	
	Current annual rental received	
	Cooling (investment) cost	
	Unit cost (by line item title)	
	Est. replacement cost	
	Real property inventory value	
	Cost index (= replacement cost/initial value or cost)	X
	Liquid fuel facilities:	
	Tanks only	X
	Pumps, pump houses, piping	X
	(FH) furniture cost	X
	% of replacement (CWE funded cost + est. replacement cost)	X
	Repair or alteration - % of replacement	X
3.4.4	Description	
	Primary item/secondary item	
	Type of construction	
	Perm., Semiperm., temp.	
	Type of facility (replacement, addition, alteration, new facility)	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.4.4	Description (cont.)	
	Type of design/space	
	Design capacity	
	Cooling capacity	
	Pavement classification	
	Pavement type	X
	Number of stories	
	Length	
	Width	
	Area:	
	(budget)	
	(directive)	
	(final design)	
	Basement	X
	Acreage	
	Liquid fuel facilities:	
	No. hydrants	X
	Storage capacity:	
	Directive	X
	Budget	X
	Final design	X
	Paving depth, area of:	
	Wearing surface	X
	Base course	X
	Subbase course	X
	Excavation and grading cu. yd.	X
	Condition	
	Material (of walls)	
	(FH) ceilings	X
	Baths	X
	Landscaping	X
	Insulation	X

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.4.4	Description (cont.)	
	Substructure	
	Roof	
	Finish of exterior walls	
	Finish of int. walls, ceilings, baths, wainscot	X
	Windows	X
	Screens	X
	Storm doors	X
	Storm sash	X
	Blinds	X
	Floors	
	Sidewalks	X
	Heating type	X
	Cooling type	X
	Dishwashers	X
	Clothes washers	X
	Clothes dryers	X
	Freezers	X
	Servant quarters	X
	Garbage disposal	X
	Range	X
	Refrigerator	X
	Master TV	X
	(FH) Capehart	
	Wherry	
	Lanham	X
	Rental housing	X
	Rental trailers	X
	Foreign source	X
	Rental guarantee	X
	Surplus commodity	X

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
3.4.4	Description (cont.)	
	Other	X
	Car shelter	X
	Storage	X
	Terrace or porch	X
3.4.5	Occupancy	
	Date of report	X
	Occupied/vacant/available/partially vacant	X
	(FH) suitable for:	
	By grade	
	By bedroom qty.	X
	Number moves in last year	X
	Other than DA	X
3.5	Undistributed funds	
	ACN of installation	
	Matrix: Group A x Group B	
	A. Public law	
	Authorization scope	
	Authorization amount	
	CWE scope	
	CWE amount	
	Cost insured	
	Est. cost to complete	
	B. Construction equipment	
	Construction inventory	
	Other costs	
	Accrued expenditures	
	Contracts and orders outstanding	
4	Repair, Maintenance and Service	
4.1	ACN	
4.PE.1	Maintenance costs/assets	

<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
4.PE.1.1 Housekeeping operations costs	
4.PE.1.1.1 DOD functional area code (contract supplied) by labor, materials and supplies, other	
<u>Maintenance, repair, and operation of real property facilities</u>	
S 705 Utility-Government owned (a)	
S 706 Installation bus services	X
S 708 Laundry, dry cleaning services	X
S 709 Janitorial service	X
S 710 Insect and rodent control	
S 712 Garbage and refuse collection	
S 713 Food services	X
S 714 Fueling service (aircraft)	X
S 715 Furniture, ofc. equip., elec. & misc. rpr. svcs.	X
S 717 Building maintenance and repair	
S 718 Grounds maintenance and repair	
S 719 Alteration of real property	
S 720 Landscaping svc., incl. agri- cultural oprns.	
S 721 Motor pool use, operation & maintenance	X
S 724 Guard service	X
S 799 Other maint., repair and operation of real property facilities	
4.PE.1.1.2 Government supplied (same funct. code areas, as applicable)	
Heat, sewage, water, air conditioning	
Fire protection/prevent, refrigeration, electricity and distribution	

	<u>Data Use Identifier (DUI)</u>	<u>Not Covered*</u>
4.PE.1.1.3	Family Housing	
	Matrix: Group A x Group B	
	A Utilities	
	Maintenance of dwellings	
	Maintenance of other real property	
	Alterations and additions	
	B Funded cost	
	Unfunded cost	
	Unit cost	
4.FY.1.1.4	Cost by FY (actual, programmed, requested):	
	Operation of utilities	
	Maintenance of real property	
	Minor construction	
	Other engineer support	
4.PE.1.2	Inventory	
	Supplies	X
	Other	X
4.PE.2	Number of lots of household goods in:	
	Military storage	X
	Commercial storage	X

---

Note: For 4.PE.1.1 and 4.PE.1.2 see also attached forms.

4150.9 (Incl 1)  
Mar 29, 66

FORMAT FOR  
REPORT OF REAL PROPERTY MAINTENANCE ACTIVITIES

Date \_\_\_\_\_

DEPARTMENT OF \_\_\_\_\_ ☒ United States ☐ Other  
(Excl. Alaska & Hawaii) (Incl. Alaska & Hawaii)

Categories of Work	Unit of Measure	Fiscal Year		
		No. of Units	Total Cost	Unit Cost
			(\$ 000):	
I. <u>ACTIVE INSTALLATIONS</u>	XXX	XXX	XXX	XXX
A. MAINT., REPAIR & OPERATION - UTILITIES	XXX	XXX	---	XXX
1. <u>Electrical</u>	XXX	XXX	---	XXX
a. Purchased Electric Energy	M KWH			
b. Electric Generating Plants	M KWH			
c. Electric Distribution Systems	M LF			
2. <u>Heating</u>	XXX	XXX	---	XXX
a. Purchased Steam and Hot Water	Mil BTU			
b. Heat Source (Over 3,500,000 BTU/Hr)	Mil BTU			
c. Heat Source (750,000 to 3,500,000 BTU/Hr)	Mil BTU			
d. Fuels issued to Heat Plants under 750,000 BTU/Hr.	Mil BTU			
e. Steam & Hot Water Distribution Systems	M LF			
3. <u>Water Plants and Systems</u>	M Gals		---	
4. <u>Sewage and Waste Systems</u>	M Gals		---	
5. <u>Air Conditioning and Refrigeration</u>	XXX	XXX	---	XXX
a. Air Conditioning Plants (Over 25 Tons)	Tons Cap:			
b. Other Refrigeration & Air Conditioning Plants (5-25 Tons)	Tons Cap:			
6. <u>Other Utilities</u>	XXX	XXX	---	XXX
B. MAINT. & REPAIR OTHER REAL PROPERTY	XXX	XXX	---	XXX
1. <u>Buildings, Total:</u>	M SqFt			
a. Training Buildings:	M SqFt			
b. Maint. & Production Bldgs:	M SqFt			
c. Research, Development & Test Bldgs:	M SqFt			

4150.9 (Incl 1)  
Mar 29, 66

d. Storage Buildings:	M Sq Ft	:	:	:
e. Hospital & Medical Facilities:	M Sq Ft	:	:	:
f. Administration Buildings:	M Sq Ft	:	:	:
g. Troop Housing Buildings:	M Sq Ft	:	:	:
h. Community Facilities:	M Sq Ft	:	:	:
i. Other Buildings:	M Sq Ft	:	:	:
2. <u>Other Facilities</u>	XXX	XXX	---	XXX
a. Waterfront	XXX	XXX	---	XXX
b. Other	XXX	XXX	---	XXX
3. <u>Pavements</u>	M Sq Yds:	:	---	:
a. Roads	M Sq Yds:	:	---	:
b. Airfields	M Sq Yds:	:	---	:
c. Other	M Sq Yds:	:	---	:
4. <u>Land (Grounds)</u>	Acres	:	---	:
a. Improved	Acres	:	---	:
b. Other	Acres	:	---	:
5. <u>Railroad Trackage</u>	M LF	:	---	:
C. SERVICES	XXX	XXX	---	XXX
1. <u>Fire Protection</u>	No. of Pers:	:	---	:
2. <u>Custodial Services</u>	M Sq Ft	:	---	:
3. <u>Entomology Services</u>	M Sq Ft	:	---	:
4. <u>Refuse Collection &amp; Disposal</u>	M CuYds	:	---	:
5. <u>Other</u>	XXX	XXX	---	XXX
D. MINOR CONSTRUCTION	XXX	XXX	---	XXX
E. ADMINISTRATION & OTHER OVERHEAD	XXX	XXX	---	XXX
F. TOTAL COST	XXX	XXX	---	XXX
G. BACKLOG OF ESSENTIAL MAINTENANCE AND REPAIR	XXX	XXX	---	XXX



4150.9 (Incl 1)  
Mar 29, 66

II.	<u>INACTIVE INSTALLATIONS</u>	:	XXX	:	XXX	:	XXX	:	XXX	
	A. TOTAL MAINTENANCE COST	:	M SqFt Bldg:	:		:	==	:	XXX	
	B. BACKLOG OF ESSENTIAL MAINTENANCE AND REPAIR	:	XXX	:	XXX	:		:	XXX	
		:		:		:		:		
		:		:		:		:		
III.	<u>MANPOWER SUMMARY</u>	:		:		:		:		
			Fiscal Year							
			Active Instl.	:	Inactive Instl.					
	A. <u>BASE POPULATION TOTAL</u>			:						
				:						
	1. Resident (incl. dependents)			:						
	2. Non-resident			:						
				:						
	B. <u>REAL PROPERTY MAINT. ACTIVITIES</u>			:						
	<u>FORCE, TOTAL</u>			:						
				:						
	1. Military			:						
	2. U. S. Civilians			:						
	3. Other Civilians			:						
				:						

UNITED STATES  
(Excl. Alaska & Hawaii)

OTHER  
(Incl. Alaska & Hawaii)

MAINTENANCE AND OPERATION OF REAL PROPERTY  
Operating Budget or Appropriation

	Unit of Measure	Unit	Prior Year				Total	BEMAR	Similar tabulations for Current Year and Budget Year
			Military Personnel	Civilian Personnel	Contract	Other			
<b>MAINTENANCE OF REAL PROPERTY</b>									
<b>1. Active Installations</b>									
<b>A. Utilities</b>									
1. Electrical									
a. Electric Generating Plants									
b. Electric Distribution Systems									
2. Heating									
a. Heat Source (over 3,500,000 BTU/Hr)									
b. Heat Source (750,000 to 3,500,000 BTU/Hr)									
c. Steam & Hot Water Distribution Systems									
3. Water Plants & Systems									
4. Sewage & Waste Systems									
5. Air Conditioning and Refrigeration									
a. Plants (over 25 Tons)									
b. Plants (5 to 25 Tons)									
6. Other Utilities									
<b>B. Other Real Property</b>									
1. Buildings Total									
a. Training									
b. Maintenance and Production									
c. Research, Development & Test									
d. Storage									
e. Hospital & Medical									
f. Administration									
g. Troop Housing									
h. Community									
i. Other									
2. Other Facilities									
a. Waterfront									
b. Other									
3. Pavements									
a. Roads									
b. Airfields									
c. Other									

On a separate schedule show the distribution of maintenance and BEMAR by Program Element.

	Prior Year							Unit Cost	REMARK	
	Unit of Measure	No. of Units	Costs			Contract	Other			Total
			Military Personnel	Civilian Personnel						
4. Land (Grounds) a. Improved b. Other	X Acres Acres	X						X		
5. Railroad Trackage	MLF									
II. Inactive Installations	M Sq Ft									
OPERATION OF UTILITIES	X	X						X	X	
1. Active Installations	X	X						X	X	
A. Utilities	X	X						X	X	
1. Electrical	M KWH	X						X	X	
a. Purchased Electric Energy	M KWH									
b. Electric Generating Plants	M KWH									
2. Heating	X									
a. Purchased Steam & Hot Water	MLF									
b. Heat Source (over 1,500,000 BTU/Hr)	Mil BTU									
c. Heat Source (750,000 to 1,500,000 BTU/Hr)	Mil BTU									
d. Fuels issued to Plants under 750,000 BTU/Hr)	Mil BTU									
3. Water Plants & Systems	M Gals									
4. Sewage & Waste Systems	M Gals									
5. Air Conditioning & Refrigeration	X	X						X	X	
a. Plants (over 25 Tons)	Tons Cap									
b. Plants (5 to 25 Tons)	Tons Cap									
6. Other Utilities	X	X						X	X	
II. Inactive Installations	X	X						X	X	
MINOR CONSTRUCTION	X	X						X	X	
I. Active Installations	X	X						X	X	
II. Inactive Installations	X	X						X	X	
OTHER ENGINEERING SUPPORT	X	X						X	X	
I. Active Installations	X	X						X	X	

•Show as nonadd entries the appropriate split between routine recurring and other for the amount shown in the Total column.

\*Show as nonadd enters the appropriate split between routine recurring and other for the amount shown in the Total column.

	Prior Year						
	Unit of Measure	No. of Units	Costs			Total	REMARK
			Military Personnel	Civilian Personnel	Contract Other		
A. <u>Services</u>	X	X					X
1. Fire Protection	No of Pers						X
2. Custodial Services	M Sq Ft						X
3. Entomology Services	M Sq Ft						X
4. Refuse Collection & Disposal	M Cu Yds	X					X
5. Other	X						X
B. <u>Administrator &amp; Overhead</u>	X	X					X
II. <u>Inactive Installations</u>	X	X					X
A. <u>Services</u>	X	X					X
B. <u>Administration &amp; Overhead</u>	X	X					X
<u>TOTAL COST</u>	X	X					X
<u>MANPOWER SUMMARY</u>							
A. <u>Base Population</u>							
1. <u>Residents</u>							
2. <u>Non-Residents</u>							
B. <u>Real Property Work Force</u>							
1. <u>Military</u>							
2. <u>U.S. Citizens</u>							
3. <u>Other Citizens</u>							

REPAIRS AND UTILITIES TECHNICAL DATA PART I - SUMMARY (AR 420-16)				SPECIAL OPERATING AGENCY INSTALLATION NAME		GENERAL OPERATING AGENCY		PERIOD ENDING		REPORTS CONTROL SYMBOL (ENCLOSURE)	
								INSTALLATION NUMBER		PAGE NO. OF PAGES	
										1 4	
SECTION I - EXPENDITURES BY COST ELEMENT, FUNCTION AND STATUS											
COST ELEMENTS		9000 0000 OPERATION OF UTILITIES		9000 0000 MAINTENANCE OF REAL PROPERTY		9070 0000 MINOR CONSTRUCTION		9000 0000 OTHER ENGINEERING SUPPORT		TOTALS	
		ACTIVE a	INACTIVE c	ACTIVE d	INACTIVE e	ACTIVE f	INACTIVE g	ACTIVE h	INACTIVE i	ACTIVE j	INACTIVE k
1 LABOR											
a. MILITARY											
b. CIVILIAN											
2 SUPPLIES											
3 FUNDED CONTRACTS											
4 OTHER (Funded and Unf.)											
5 TOTAL EXPENDITURES											
SECTION II - PERFORMANCE FACTORS											
ACTIVITY a	FACTOR b	ACTIVE c	INACTIVE d	TOTAL e	ACTIVITY f	FACTOR g	PERCENT h	ITEM NO. i	DESCRIPTION j	VALUE (Standard Pr.) k	NUMBER PIECES OF EQUIPMENT l
OPERATION OF UTILITIES 9050.0000	POPULATION SERVED							1	ON HAND AT END OF PRIOR PERIOD		
	1. RESIDENT				MINOR CONSTRUCTION 9070.0000	PERCENT OF 9000 0000		2	ACQUIRED DURING PERIOD		
	2 NON-RESID							3	DISPOSED OF DURING PERIOD		
MAINTENANCE OF REAL PROPERTY 9000 0000	M SOFT				MANAGEMENT & ENGINEERING SUM OF 9000.0000 & 9000.0100	PERCENT OF SUM OF 9050 0000 9060 0000 9070 0000 9080 0000		4	AVAILABLE AT END OF PERIOD		
	BEARER (2000)							5	OVER-AGE AT END OF PERIOD		

DA FORM 2788  
1 MAY 66

PREVIOUS EDITION OF THIS FORM IS OBSOLETE

SECTION IV - DISTRIBUTION OF RPA EXPENDITURES AND UNFINANCED WORKLOAD BY SOURCE OF FUNDS AND TYPE OF FINANCING						
BUDGET ACCOUNT	EXPENDITURES BY RPA FUNCTION (Dollars in Thousands)				UNFINANCED WORKLOAD	
	CODE 800 0000 OTHER UTILITIES	CODE 800 0000 MAINTENANCE OF REAL PROPERTY	CODE 800 0000 CONSTRUCTION	CODE 800 0000 OTHER ENGINEER- ING SUPPORT	BEMAR	TOTAL (incl BEMAR)
TOTAL						
DIRECT FINANCING						
MPA						
* OMA CARRIER - ( )						
* OMA OTHER - ( )						
ROTE - ( P 500 )						
PEMA - ( OTHER - SPECIFY )						
AIF OVERHEAD						
OTHER (Specify)						
REIMBURSABLE FINANCING						
PMMA - ( 1910 )						
PMMA - ( 1920 )						
ROTE - ( P 500 )						
PEMA - ( OTHER - SPECIFY )						
PEMA - ( )						
AIF OVERHEAD						
OTHER ARMY						
AIR FORCE						
NAVY						
OTHER FEDERAL						
NON-FEDERAL						

\* OMA "Carrier Budget Program" account  
 \* OMA account for cost distribution para 13-72, AR 37-108

REPAIRS AND UTILITIES TECHNICAL DATA PART II - UTILITIES (Except Heating) (AR 420-16)				SPECIAL OPERATING AGENCY		GENERAL OPERATING AGENCY		PERIOD ENDING		REPORTS CONTROL SYMBOL (END-MR-4)	
				INSTALLATION NAME				INSTALLATION NUMBER		PAGE NO	
										2 4	
ACTIVITY CODE	ACTIVITY	PERFORMANCE			EXPENDITURES			UNFINANCED WORKLOAD			
		FACTOR	QUANTITY	FACTOR	QUANTITY	FUNDED CONTRACTS	TOTAL LABOR		TOTAL SUPPLIES	TOTAL EXPENDITURES	
9050.1000	PROVISION OF WATER SERVICE	M GALS									
9050.1100	PURCHASED WATER	M GALS									
9050.1200	WATER TREATMENT OPERATIONS	M GALS									
9050.1300	WATER PUMPING OPERATIONS	M GALS									
9050.2000	PROVISION OF SEWAGE SERVICE	M GALS									
9050.2100	PURCHASED SEWAGE DISPOSAL	M GALS									
9050.2200	SEWAGE TREATMENT OPERATIONS	M GALS									
9050.2300	SEWAGE PUMPING OPERATIONS	M GALS									
9050.2000	PROVISION OF ELECTRIC SERVICE	M KWH									
9050.3100	PURCHASED ELECTRIC ENERGY	M KWH									
9050.3200	ELECTRIC GENERATING PLANTS OPERATION	M KWH									
9050.5000	COLD STORAGE PLANTS AND AIR CONDITIONING PLANTS	TON CAP									
9050.5100	AIR CONDITIONING PLANTS (Over 25-Ton Capacity)	TON CAP									
9050.5200	COLD STORAGE PLANTS (Including Ice Manufacturing)	HP CAP									
9050.9000	OTHER UTILITIES OPERATION										

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DA FORM 2788-1  
1 MAY 63

ACTIVITY CODE	ACTIVITY	PERFORMANCE				EXPENDITURES				UNFINANCED WORKLOAD
		FACTOR	QUANTITY	FACTOR	QUANTITY	FUND OR CONTRACTS	TOTAL LABOR	TOTAL SUPPLIES	TOTAL EXPENDITURES	
9000 1100	WATER SYSTEMS									
9000 1110	WATER FILTRATION AND TREATMENT PLANTS	M GALS								
9000 1120	WATER PUMPING PLANTS	M GALS								
9000 1130	WATER DISTRIBUTION MAINS AND SERVICES	LINEAL FEET								
9000 1200	SEWAGE SYSTEMS									
9000 1210	SEWAGE TREATMENT PLANTS	M GALS								
9000 1220	SEWAGE PUMPING PLANTS	M GALS								
9000 1230	SEWAGE COLLECTION SYSTEMS	LINEAL FEET								
9000 1300	ELECTRIC SYSTEMS									
9000 1310	ELECTRIC GENERATING PLANTS	NO. PLANTS		KVA CAP						
9000 1320	ELECTRIC DISTRIBUTION MAINS AND SERVICES	LINEAL FEET								
9000 1330	ELECTRIC DISTRIBUTION TRANSFORMERS	KVA CAP								
9000 1340	EXTERIOR LIGHTING	NO LIGHTS								
9000 1500	REFRIGERATION AND AIR CONDITIONING									
9000 1510	AIR CONDITIONING - PLANTS (Over 25 Tons)	TONS CAP								
9000 1520	COLD STORAGE PLANTS (Including Ice Manufacturing)	HP CAP								
9000 1530	AIR CONDITIONING (2 - 25 Tons)	TONS CAP								
9000 1540	REFRIGERATION (2 - 25 Tons)	TONS CAP								
9000 1900	OTHER UTILITIES									



REPAIRS AND UTILITIES TECHNICAL DATA PART III - UTILITIES - HEATING (AR 420-16)		SPECIAL OPERATING AGENCY		GENERAL OPERATING AGENCY		PERIOD ENDING		REPORTS CONTROL SYMBOL END-M(RM)	
INSTALLATION NAME		INSTALLATION NUMBER		INSTALLATION NUMBER		INSTALLATION NUMBER		PAGE NO. 3	
INSTALLATION NAME		INSTALLATION NUMBER		INSTALLATION NUMBER		INSTALLATION NUMBER		PAGE NO. 4	
ACTIVITY CODE	ACTIVITY	MILLION BTU	THOUSAND CUBIC FEET HEATED SPACE	STANDARD TONS OF FUEL	MAN-DAYS	FUNDED CONTRACTS	TOTAL LABOR	FUEL	TOTAL EXPENDITURES
9050.4100	BOILER PLANTS, HIGH PRESSURE OVER 3,500,000 BTU CAPACITY (Operation)								
9050.4110	GAS FIRED								
9050.4120	OIL FIRED								
9050.4130	COAL FIRED								
9050.4200	HEATING PLANTS, OVER 3,500,000 BTU CAPACITY (Operation)								
9050.4210	GAS FIRED								
9050.4220	OIL FIRED								
9050.4230	COAL FIRED								
9050.4300	HEATING PLANTS, 750,000 TO 3,500,000 BTU CAPACITY (Operation)								
9050.4310	GAS FIRED								
9050.4320	OIL FIRED								
9050.4330	COAL FIRED								
9050.4400	HEATING PLANTS, UNDER 750,000 BTU CAPACITY (Operation)								
9050.4410	GAS FIRED								
9050.4420	OIL FIRED								
9050.4430	COAL FIRED								

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DA FORM 2788-2  
1 MAY 66

ACTIVITY CODE	ACTIVITY	PERFORMANCE			EXPENDITURES				UNFINANCED WORKLOAD
		MILLION BTU	FACTOR	QUANTITY	FUNDED CONTRACTS	TOTAL LABOR	TOTAL SUPPLIES	TOTAL EXPENDITURES	
9050 4500	PURCHASED STEAM AND HOT WATER								
9050 4600	COAL HANDLING			TONS					
9060 1410	BOILER PLANTS, HIGH PRESSURE, OVER 3,500,000 BTU CAPACITY (H&R)			NUMBER PLANTS					
9060 1411	GAS FIRED			NUMBER PLANTS					
9060 1412	OIL FIRED			NUMBER PLANTS					
9060 1413	COAL FIRED			NUMBER PLANTS					
9060 1420	HEATING PLANTS OVER 3,500,000 BTU CAPACITY (H&R)			NUMBER PLANTS					
9060 1421	GAS FIRED			NUMBER PLANTS					
9060 1422	OIL FIRED			NUMBER PLANTS					
9060 1423	COAL FIRED			NUMBER PLANTS					
9060 1430	HEATING PLANTS 750,000 TO 3,500,000 BTU CAPACITY (H&R)			NUMBER PLANTS					
9060 1431	GAS FIRED			NUMBER PLANTS					
9060 1432	OIL FIRED			NUMBER PLANTS					
9060 1433	COAL FIRED			NUMBER PLANTS					
9060 1440	OTHER HEATING SUPPORT								
9060 1441	STEAM AND HOT WATER DISTRIBUTION SYSTEMS			LINEAL FEET					
9060 1442	GAS DISTRIBUTION SYSTEMS			LINEAL FEET					

REPAIRS AND UTILITIES TECHNICAL DATA PART IV - BUILDINGS AND GROUNDS ACTIVITIES, MINOR CONSTRUCTION AND OTHER ENGINEERING SUPPORT (AR 420-10)				PERIOD ENDING		REPORTS CONTROL SYMBOL ZNC-54(R6)	
SPECIAL OPERATING AGENCY				INSTALLATION NUMBER			
GENERAL OPERATING AGENCY				INSTALLATION NAME		PAGE NO	NO OF PAGES
						4	4
ACTIVITY CODE	ACTIVITY	PERFORMANCE		EXPENDITURES		UNFINANCED WORKLOAD	
		FACTOR	QUANTITY	FUNDED CONTRACTS	TOTAL EXPENDITURES		
a	b	c	d	e	f	g	
9060 2000	BUILDING	M SQ FT					
9060 2100	TRAINING	M SQ FT					
9060 2200	MAINTENANCE AND PROTECTION	M SQ FT					
9060 2300	RESEARCH DEVELOPMENT AND TEST	M SQ FT					
9060 2400	STORAGE	M SQ FT					
9060 2500	HOSPITAL AND MEDICAL	M SQ FT					
9060 2600	AIRPORT STATION	M SQ FT					
9060 2700	TROOP HOUSING	M SQ FT					
9060 2800	COMMUNITY	M SQ FT					
9060 2900	OTHER	M SQ FT					
9060 2910	FAMILY HOUSING	M SQ FT					
9060 2990	OTHER MISCELLANEOUS	M SQ FT					
9060 3000	GROUNDS MAINTENANCE	ACRE					
9060 3100	IMPROVED GROUNDS	ACRE					
9060 3200	OTHER THAN IMPROVED	ACRE					
9060 4000	RAILROAD MAINTENANCE	ACTIVE M LIN FT INACTIVE M LIN FT					
9060 5000	SURFACED AREAS MAINTENANCE	M SQ YDS					
9060 5100	ROADS	M SQ YDS					
9060 5200	AIRFIELD PAVEMENTS	M SQ YDS					
9060 5300	PARKING OPEN STORAGE AND WALKS	M SQ YDS					
9060 6000	SPECIAL EQUIPMENT AND MISCELLANEOUS MAINTENANCE						
9060 6100	WATERFRONT FACILITIES	DOLLAR VALUE					
9060 6200	WATERWAYS						
9060 6300	OTHER STRUCTURES AND SPECIAL EQUIPMENT AND MISCELLANEOUS MAINT						

DA FORM 2788-3

PREVIOUS EDITION OF THIS FORM IS OBSOLETE

ACTIVITY CODE <i>e</i>	ACTIVITY <i>b</i>	PERFORMANCE		EXPENDITURES		UNFINANCED WORKLOAD <i>f</i>
		FACTOR <i>c</i>	QUANTITY <i>d</i>	FUNDED CONTRACTS <i>e</i>	TOTAL EXPENDITURES <i>f</i>	
9070 1000	MINOR CONSTRUCTION					
9080 1000	FIRE PREVENTION AND PROTECTION	MIL PERSON				
		CIV PERSON				
9080 2100	REFUSE COLLECTION	CU YDS				
9080 2200	REFUSE DISPOSAL	CU YDS				
9080 3000	ENTOMOLOGY SERVICES	M SQ FT				
9080 4000	CUSTODIAL SERVICES	M SQ FT				
9080 5000	SNOW REMOVAL AND ICE ALLEVIATION					
9080.6000	MANAGEMENT & ENGINEERING <i>(Active) (incl. Master Planning)</i>	* GRAND TOTAL				
9080 8100	MANAGEMENT & ENGINEERING <i>(Inactive)</i>					
9080 8900	OTHER ENGINEER ACTIVITIES <i>(Inactive)</i>					
9080 9000	MISCELLANEOUS ENGINEER ACTIVITIES					
REMARKS						

REPAIRS AND UTILITIES COMMAND ANALYSIS OF UTILITIES OPERATIONS					COMMENTS		REPORT CONTROL SYMBOL EN-111 (R2)	
Period of time covered by report: 1 OCT 66 to 31 OCT 66					PART I: OPERATING DATA		FISCAL YEAR	
ITEM NO.	ITEM	UNIT	QUANTITY	UNIT OF MEASURE	STANDARD	ACTUAL		
1	ELECTRICAL MOTORS (1/2 HP & Over)	WATTS						
2	DISTRIBUTION TRANSFORMERS	KVA						
3	POWER FAILURES ON POST							
4	REFRIGERATION REFRIGERANT CHARGE	POUNDS						
5	BOILER PLANTS BTU PRODUCED	MIL BTU						
6	FUEL CONSUMED	STANDARD TONS						
7	HEATING FUEL CONSUMED	STANDARD TONS						
8	HEATED SPACE	M CUBIC FEET						
9	DEGREE DAYS 65° BASE	NUMBER						
10	WATER UNFILTERED	M GALLONS						
11	FILTERED	M GALLONS						
12	SAMPLES POSITIVE PORTIONS	SAMPLE						
13	10 ML PORTIONS POSITIVE	PORTIONS						
14	SEWAGE PRIMARY	M GALLONS						
15	SECONDARY	M GALLONS						
16	UNTREATED	M GALLONS						

REPLACES DA FORM 2869 1 OCT 66 WHICH IS OBSOLETE

DA FORM 2869

REPAIRS AND UTILITIES COMMAND ANALYSIS OF UTILITIES OPERATIONS PART II - UTILIZATION PROGRAM For use in this form, see AR 420-44, the proponent agency is Office of the Chief of Engineers				REPORTS CONTROL SYMBOL FV-111 (R)	
FISCAL YEAR		FISCAL YEAR		FISCAL YEAR	
ITEM NO.	ITEM	TARGET	CORRECTED TARGET	ACTUAL	TARGET
1	HEATING SERVICES \$				
2	WATER AND SEWER				
3	WATER AND SEWER				
4	WATER SUPPLY SYSTEMS				
5	WATER SUPPLY SYSTEMS				
6	DEGREES DAY BASE				
7	DEGREES DAY BASE				
8	FUEL OILING AND MAINT.				
9	FUEL OILING AND MAINT.				
10	SPECIAL PURPOSE FUELS (tons)				
11	FUEL SALES (including heat) (tons)				
12	TOTAL FUEL (tons)				
13	AVERAGE COST OF FUEL (\$/ton)				
14	COSTS OTHER THAN FUEL (\$)				
15	ELECTRICAL SERVICES (\$)				
16	HOUSING TYPE INSTALLATIONS TOTAL KWH PURCHASED OR GENERATED				
17	UNIT COST \$/KWH				

DA FORM 2869-1

REPLACES DA FORM 2869-1, 1-64, WHICH IS OBSOLETE

CONTINUED ON REVERSE

REPAIRS AND UTILITIES COMMAND ANALYSIS OF UTILITIES OPERATIONS PART II - UTILIZATION PROGRAM (C and lower)					COMMAND		REPORTS CONTROL SYMBOL: REP-115 (2)	
					DATE		FISCAL YEAR	
ITEM NO	ITEM	TARGET	FISCAL YEAR		NEXT FISCAL YEAR			
			CORRECTED TARGET	ACTUAL				
18	KWM SOLD							
19	KW DEMAND							
20	DEPOT TYPE INSTALLATIONS: TOTAL KWM PURCHASED OR GENERATED							
21	UNIT COST (B per kWh)							
22	KWM SOLD							
23	KW DEMAND							
24	PERSONS ASSIGNED							
25	PERSONS REQUIRED FOR 1985 ACTIVITY							
26	WATER SERVICES	5						
27	TOTAL M GALLONS PURCHASED AND PRODUCED							
28	SALES M GALLONS							
29	GENERAL BUILDING TYPE INSTALLATIONS: DAILY AVERAGE RESIDENTS							
30	DAILY AVERAGE NON-RESIDENTS							
31	DESIGNED HOUSING CAPACITY							
32	DEPOT TYPE INSTALLATIONS: DAILY AVERAGE RESIDENTS							
33	DAILY AVERAGE NON-RESIDENTS							
34	DESIGNED HOUSING CAPACITY							

<b>REPAIRS AND UTILITIES COMMAND ANALYSIS OF UTILITIES OPERATIONS</b> PART III - NARRATIVE REVIEW For use of this form, see AR 420-44, the proponent agency is Office of the Chief of Engineers		<b>COMMAND</b>	<b>REPORTS CONTROL SYMBOL ENG-111 (R2)</b> DATE: _____ FISCAL YEAR: _____

**DA FORM 2869-2**

REPLACES DA FORM 2869-2, 1 OCT 64, WHICH IS OBSOLETE



**FY\_\_ MAINTENANCE OF REAL PROPERTY FACILITIES (MRPF)  
OPERATION AND MAINTENANCE, ARMY  
(Dollars in Thousands)**

(Dollars in Thousands)												
Command/Installation	Project/Category	Changes in 1 July Unfinanced Requests				Additional Work in FY 19				Est. Cost 30 Jun Unfinanced		
		Est. Cost 1 July 19 Unfinanced b	Repric- ing (+) c	Dropped (-) d	Oblig- ations (-) e	Net Change (-) f	New (+) g	Category Changes (-) h	Adjust- ments (+) i		Obliga- tions (-) j	Net Change (-) k
	a					c, d, e					g, h, i, j	b, f, k
	1. BENAR Subtotal											
	2. MRP (9060) Projects \$50,000 and over.											
	3. MRP (9060) Projects under \$50,000											
	4. Non-BENAR Subtotal											
	5. MRP (9060) Projects over \$10,000											
	6. MRP (9060) Projects under \$10,000											
	7. Minor Construction (9070)											
	8. Other MRP (9060)											
	9. Other Engineering Support (Functional Category 12) applicable to "Floor" (9080.g) (9080.h)											
	10. Total											
Memorandum Entry - Assigned MRPF Floor FY (thousand dollars): \$ (Source: )												

Clr 420-32

Figure 1. Format for Summary Analysis.

YF69 MAINTENANCE OF REAL PROPERTY FACILITIES (MRPF)  
OPERATION AND MAINTENANCE, ARMY  
(Dollars in Thousands)

Command/Installation	Charges in 1 July Anticipated Recruits					Additional Work in FY 1969				Est. Cost 30 Jun 69 Unfinanced b, f, k
	Est. Cost 1 July 1969 Unfinanced b	Repairs (+) c	Dropped (-) d	Charges (-) e	Net Change (-) f	New (+) g	Category Changes (-) h	Adjust- ments (+) i	Obliga- tions (-) j	Net Change (+) k
1. BEMAR Subtotal	568	12	-82	-380	-450	83		10	-28	65
2. MRP (9060) Projects over \$50,000	(517)	(10)	(-67)	(-360)	(-417)	(55)		(10)		(65)
3. MRP (9060) Projects under \$50,000	(51)	(2)	(-15)	(-20)	(-3*)	(28)			(-28)	
4. Non-BEMAR Subtotal	700	75	-40	-550	-515	100			-50	50
5. MRP (9060) Projects over \$10,000	(600)	(50)	(-40)	(-500)	(-490)	(100)			(-50)	(50)
6. MRP (9060) Projects under \$10,000	(100)	(25)		(-50)	(-25)					(75)
7. Minor Construction (9070)	x	x	x	x	x	10			-10	xx
8. Other MRP (9060)	x	x	x	x	x	40			-40	xx
9. Other Engineering Support (Functional Category 12) applicable to "Floor" (9080.6) (9080.7)	x	x	x	x	x	50			-50	xx
10. Total	1,268	87	-122	-930	-965	283		10	-178	115

Memorandum Entry - Assigned MRPF Floor FY 69 (thousand dollars): \$700 (Source: AOB Advice #47, dated 22 May 69).

Figure 2. Example of Summary Analysis.

Installation		Changes in 1 July Unfinanced Recmnts					Additional Work in FY 1969			Est. Cost 30 Jun 69	
PROJECT/CATEGORY	Est. Cost 1 July 1968 Unfinanced	Repricing (+) (-)	Dropped (-)	Obligations (-)	Net Change (+) (-)	New Changes (+) (-)	Category Changes (+) (-)	Adjustments (+) (-)	Obligations (+) (-)	Net Change (+) (-)	Est. Cost 30 Jun 69
MRP (9060) Projects \$50,000 and over BEAR)	517	10	- 67	-360	-417	55		10		65	65
TOTAL											
1. Replace roof on 80 Bldgs, 5,000 squares partial accomplishment Cat 721,724, 171, BP 2200.	200	10		-110	-100						100
2. Resurface road w/2 1/2 hot mix asphalt - 14 St. Beaver Ave to Oct Road. 250,000 Sq, Cat 851, BP 2200	250			-250	-250						
3. Repair Central Heat Plant, 33 million BTU. Repair 10,000 LP Steam lines. Recube 500 HP boiler and 2-250 HP boiler. Repair roof plant 100 squares Cat 821, BP 2200 Dropped - Advanced completion of new plant	67		- 67		- 67						
4. Replace 450 Old Style Fire Hydrants, 20000 Lin Ft water line. Cat 842 BP 2200						55		10		65	65

NOTES: 1/ Priority Listing

**Figure 3. Example of project listing.**

OPERATION AND MAINTENANCE, ARMY  
LONG RANGE WORK PLANS  
FY 1972 - FY 1975  
(Thousands of Dollars)

COMMAND/INSTALLATION		PERIOD FY 1972 - FY 1975	TOTAL RESOURCE REQUIREMENTS			DATE PREPARED
DESCRIPTION		E S T I M A T E D				
		FY 1972	FY 1973	FY 1974	FY 1975	
CIVILIAN PERSONNEL (INCLUDING PRINCE BENEFITS)						
MILITARY PERSONNEL						
SUPPLIES						
PURCHASED UTILITIES AND OTHER SERVICES						
CONTRACT PROJECTS						
EQUIPMENT						
UNFINANCED REQUIREMENTS						
TOTAL REQUIREMENTS						
(UNFUNDED)						
<del>FOUNDED</del> NET REQUIREMENTS						

Figure 4. Operation and Maintenance, Army - Long Range Work Plans.

C. DUI's Not to be Covered in the Phase IIB DFSR

<u>Subsection B Location</u>	<u>Data Use Identifier</u>	<u>Requiring Report</u>
1.1.1	Installation ident. codes (e.g., DOD)	
1.1.2	Office of Emergency Preparedness Region	DD 3005.2
1.1.4	Status/function Operator (gov't/contractor, by yr. 1, 2, 3, 4, following years) Major activities	DOD 4100.33 DA 1674-R
1.1.5	Family Housing Defense Transfer Account	
1.1.6	Locality data Major communities and/or counties served Service radius, miles Service radius, travel time minutes Service area population Service area reservist potential Reserve forces facilities in area Active forces installation in area Installation layout map number	DD 1390S DD 1390S DD 1390S DD 1390S DD 1390S DD 1390S DD 1390S DD 1390S
2.EY.2.2	Full Strength: Civilian: U.S. direct hire Foreign direct hire Contract  Students: O, EM, C; 20 weeks or more by grade O, EM, C; less than 20 weeks by grade  BAQ authorized, by grade Reference document (TOE, TDA contract, etc.)	DOD 7110.1-M
2.EY.2.3	Authorized strength: same categories as above	
2.EY.2.4	Actual/assigned E-4 with 4 years E-4 with less than 4 years Civilian categories Reference document (TOE, TDA, contract, etc.)	DOD 4165.45 F-A DOD 4165.45 F-A 7110.1-M

<u>Subsection B Location</u>	<u>Data Use Identifier</u>	<u>Requiring Report</u>
	Students: BAQ authorized, by grade (FH) Housing population	DOD 4165.45 F-A
2.EY.2.7	Frequency and/or type of utilization	DD 1390S
2.2	Facility utilization planning factors	
3.2	Guidance State reserve facilities board recommendation, date Gross contingency estimate: Prior cumulative FY estimate Proposed revision by Military Dept. Proposed revision by OSD	DD 1390S DOD 7150.3 F-C DOD 7150.3 F-C DOD 7150.3 F-C DOD 7150.3 F-C
3.3.1	General Submission no./post request no. Type of protection desired (petroleum facil.) FH program and subprogram	DOD 7150.3 F-C AR 415.22 DA 2866
3.3.3	PPBER Scope: OSD adjustment (FH) date design directive issued Financing (\$ amount, by FY): Proposed funding OSD adjustment Work method: contract, Post Engineer, purchase and hire, troop project Contractor's bond insurance Overhead Profit	DOD 7150.3 F-C DD 1398 DOD 7150.3 F-A DOD 7150.3 F-A AR 415-35 AR 415-35 AR 415-35
3.3.4	Contract data Invitation/specification no. Title (of invitation or spec.) Type of contract No. of bidders Dates: Bid opening Contract negotiated Completion (actual) (F.H.) first occupancy date (F.H.) full occupancy date	DD 813, -1, -2 DD 813, -1, -2 DD 813, -1, -2 DD 813, -1, -2 DD 813 DD 813 DD 1405 DD 1398 DD 1398

Subsection B  
Location

Data Use Identifier

Requiring  
Report

Job no.	
Serial no.	
Name and location of A-E firm	DD 1398
Name of co. with which contract was placed	DD 1398
Reason contract awarded w/o formal advertising	AR 420.21
(F.H.) Three lowest bids	DD 1398
No. of identical buildings	DD 813
Complete project low bidder	DD 813
Complete project budget	DD 813
Complete project gov't estimate	DD 813
Individual facility low bid	DD 813
Individual facility budget	DD 813
Individual facility gov't est.	DD 813
Cost based on award: (total \$)	
Individual facilities	DD 813
GFE and material (facil.)	DD 813
Contingencies (facil.)	DD 813
Cost based on award:	
Planning	DD 813
Overhead	DD 813
A-E design (facil.)	DD 813
A-E supervision (facil.)	DD 813
Individual item (e.g., utilities, site impr.)	DD 813
Heating Plant and/or Heat Distribution	DD 813
Contingencies, Planning, Overhead	DD 813
A-E Design	DD 813
A-E Supervision	DD 813
Transferred by	DD 1354
Accepted by	DD 1354
Construction Deficiencies	DD 1354
Paving Total Item Cost of:	
Sub-base course	DD 813-2
Excavation and grading	DD 813-2
Drainage and other work	DD 813-2
Transfer at time of:	
Beneficial occupancy	
Physical completion	
Financial	
Other	
Date transferred	
Date accepted	
Construction deficiencies	
Property voucher no.	
Working drawing no.	DD 813

Subsection B  
Location

Data Use Identifier

Requiring  
Report

3.4.2

Legal

Sponsoring agency/service  
Order of possession  
Fee title  
Transfer  
Pub. domain

DD 1390S  
DD 1390S  
DD 1390S

Current entitlement status  
(joint, outgranted, occupied)

DA 2541

Transferee

Change code

DA 2541

Date available for excess  
status (real estate)

AR 405-90

Reason available

AR 405-90

Contractual commitments

AR 405-90

No. persons who will lose jobs

AR 405-90

Clearance of explosives reqd.

AR 405-90

3.4.3

Cost Index (=replacement cost/  
initial value or cost)

4270.24 Format B

Cost, Liquid Fuel Facilities:

Tanks only

DD 813-1

Pumps, pump houses,  
piping

DD 813-1

(FH) furniture cost

DOD 7220.16 F-A

% of replacement (CWE funded  
cost ÷ est. replacement cost)

Repair or alteration - % of  
replacement

DOD 4270.24 F-B

3.4.4

Pavement type

DD 813-2

Basement area

DD 813

Liquid fuel facilities:

No. hydrants

DD 813-1

Storage capacity:

DD 813-1

Directive

Budget

Final design

Paving depth, area of:

DD 813-2

Wearing surface

Base course

Subbase course

Excavation and grading cu. yd. DD 813-2

Family Housing:

Baths

DD 1398

Landscaping

DD 1398

Insulation

DD 1398

Finish of interior walls,

ceilings, bath, wainscot DD 1398



	<u>Data Use Identifier</u>	<u>Requiring Report</u>
	Windows	DD 1398
	Screens	DD 1398
	Storm sash; Storm doors	DD 1398
	Blinds	DD 1398
	Sidewalks	DD 1398
	Heating type	DD 1398
	Cooling type	DD 1398
	Dishwashers	DD 1411
	Clothes washers	DD 1398
	Clothes dryers	DD 1398
	Freezers	DD 1411
	Servant quarters	DD 1411
	Garbage disposal	DD 1398
	Range	DD 1398
	Refrigerator	DD 1398
	Master TV	DD 1398
	Lanham	DD 1410
	Rental housing	DA 2576-R
	Trailers	DA 2576-R
	Foreign source	DA 2576-R
	Rental guaranty	DA 1410
	Surplus commodity	DA 2576-R
	Other	DA 2576-R
	Car shelter	DD 1398
	Storage	DD 1398
	Terrace or porch	DD 1398
3.4.5	Occupancy	
	Occupied/vacant/available/partially vacant	DD 1364
	(FH) suitable for:	DD 1410
	By bedroom qty.	DD 1410
	Date of report (occupancy)	DD 1398
	No. of moves last yr.	DD 1410
	Other than DA	DA 2576-R
4.PE.1.1.1	DOD functional area code (contract supplied) by labor, materials and supplies, other	
	<u>Maintenance, repair, and operation of real property facilities</u>	
	S 706 Installation bus services	DOD 4100.33
	S 708 Laundry, dry cleaning services	DOD 4100.33
	S 709 Janitorial service	DOD 4100.33
	S 712 Garbage and refuse collection	

Subsection B  
Location

Data Use Identifier

Requiring  
Report

	S 713 Food Services	
	S 714 Fueling Service (aircraft)	DOD 4100.33
	S 715 Furniture ofc. equip.,	
	elec. & misc. rpr. svcs.	DOD 4100.33
	S 721 Motor pool use. operation	
	& maintenance	DOD 4100.33
	S 724 Guard service	DOD 4100.33
4. PE.1.2	Inventory	
	Supplies	
	Other	
4. PE.2	No. of lots of household goods in	
	Military storage	DD 1166
	Commercial storage	DD 1166

D. Selected Forms Containing DUI's Not Covered

The following forms are included:

- |     |                     |  |
|-----|---------------------|--|
| 1.  | DD 813              | Report of Cost and Analysis -<br>Buildings   |
| 2.  | DD 813-1            | Report of Cost and Analysis Liquid<br>Fueling and Dispensing Facilities<br>and Liquid Fuel Storage |
| 3.  | DD 813-2            | Report of Cost and Analysis -<br>Paving  |
| 4.  | DD 1166             | Report of Household Goods Storage<br>Activities  |
| 5.  | DD 1354             | Transfer and Acceptance of Military<br>Real Property   |
| 6.  | DD 1398             | Progress Report of Military Family<br>Housing Project  |
| 7.  | DD 1410             | Inventory and Occupancy of Military<br>Owned and Controlled Family Housing<br>Units                |
| 8.  | DD 1411             | Statement of Facilities and Assign-<br>ment  |
| 9.  | DOD Dir. 3005.2     | Non-Industrial Facilities for Mobili-<br>zation  |
| 10. | DODI 4145.5         | Use of Space   |
| 11. | 7110.1-M            | Reconciliation of Annual Budget with<br>FYDP   |
| 12. | DA 2576-R           | Personnel Occupying Army Family<br>Housing   |
| 13. | AR 405-90, p. 6 & 7 |  |
| 14. | AR 415-22, p. 3     |  |

4270.10 (Incl 1)  
Jun 3, 63

REPORT OF COST AND ANALYSIS - BUILDINGS				DATE PREPARED		REPORT CONTROL SYMBOL	
1. TITLE (Indicate for Bldg or Installation)				2. TITLE (Individual Facility)			
3. STATION				4. LOCATION			
5. INVITATION (Specification Number)				6. NUMBER OF BIDDERS		7. TYPE OF CONTRACT AND CONTRACT NUMBER	
8. DATE OF BID OPENING				9. DATE OF AWARD		10. DATE CONTRACT NEGOTIATED	
11. COMPLETE PROJECT (Indicate for Bldg)				12. INDIVIDUAL FACILITY			
LOW BIDDER		BUDGET		GOV'T ESTIMATE		13. NUMBER OF IDENTICAL BUILDINGS	
LOW BIDDER		BUDGET		GOV'T ESTIMATE		14. CONSTRUCTION PERIOD	
15. GROSS AREAS				16. BASED ON DRAWING NUMBER			
PER BLDG (Sq Ft)		NO OF BLDGS		TOTAL (Sq Ft)		17. WORKING DRAWING NUMBER	
BUDGET		DEFINITIVE		STANDARD WORKING		18. NUMBER OF STORES (W/S Grounds)	
DIRECTIVE		OTHER		AREA OF BASEMENT (Sq Ft)		19. AREA OF BASEMENT (Sq Ft)	
FINAL DESIGN		OTHER		OTHER		OTHER	
20. COST BASED ON AWARD							
INDIVIDUAL FACILITY (Building only)				TOTAL GROSS SQ FT OF BUILDING		PERCENT (%)	
21. GOVERNMENT FURNISHED EQUIPMENT AND MATERIAL (Planned and Construction Funds)				TOTAL		UNIT COST PER SQ FT	
22. CONTINGENCIES				TOTAL		UNIT COST PER SQ FT	
(1) PLANNING/Design and Engineering				TOTAL		UNIT COST PER SQ FT	
(2) OVERHEAD (Expediting, Inspection and Administration)				TOTAL		UNIT COST PER SQ FT	
23. SUB-TOTAL				TOTAL		UNIT COST PER SQ FT	
24. INDIVIDUAL ITEM (Area Office and Site Improvement)				TOTAL		UNIT COST PER SQ FT	
25. HEATING PLANT AND/OR HEAT DISTRIBUTION				TOTAL		UNIT COST PER SQ FT	
26. CONTINGENCIES, PLANNING AND OVERHEAD				TOTAL		UNIT COST PER SQ FT	
27. TOTAL COST (Individual Item)				TOTAL		UNIT COST PER SQ FT	
28. EXPLANATION OF CONTINGENCY, DESIGN, AND SUPERVISION COSTS							
ITEM 28A				ITEM 28B			
A - E DESIGN				A - E SUPERVISION			
A - E DESIGN				A - E SUPERVISION			
29. STANDARD OF CONSTRUCTION				30. SIGNATURE			
TYPED NAME, TITLE AND STATION OF PERSON PREPARING REPORT				SIGNATURE OF PERSON PREPARING REPORT			

DD FORM 813  
1 MAY 63

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE.

4270.10 (Incl 2)  
Jun 3, 63

REPORT OF COST AND ANALYSIS LIQUID FUELING AND DISPENSING FACILITIES AND LIQUID FUEL STORAGE				DATE PREPARED		REPORT CONTROL SYMBOL	
TO:				FROM:			
1. TITLE (Invitation for Bid or Specification)							
2. TITLE (Individual Facility)							
3. STATION				4. LOCATION			
5. INVITATION (Specification) NUMBER				6. NUMBER OF BIDDERS		7. TYPE OF CONTRACT AND CONTRACT NO.	
8. DATE OF BID OPENING		9. DATE OF AWARD		10. DATE CONTRACT NEGOTIATED			
11. COMPLETE PROJECT (Invitation for Bid)				12. INDIVIDUAL FACILITY			
LOW BIDDER		BUDGET		GOV'T ESTIMATE		LOW BIDDER	
\$		\$		\$		\$	
13. STORAGE (Barrels)				14. NUMBER OF HYDRANTS FOR FUELING SYSTEMS		15. CONSTRUCTION PERIOD	
DIRECTIVE		BUDGET		FINAL DESIGN		16. WORKING DRAWING NUMBER	
17. COST BASED ON AWARD				PERCENT (%)		TOTAL	
A. TANKS ONLY						\$	
B. PUMPS, PUMP HOUSES AND PIPING						\$	
C. OTHER RELATED FACILITIES (Describe in item 1 below)						\$	
D. GOVERNMENT FURNISHED EQUIPMENT AND MATERIALS (Furnished from Construction Funds)						\$	
E. SUB TOTAL						\$	
F. CONTINGENCIES						\$	
(1) PLANNING (Design and engineering)						\$	
(2) OVERHEAD (Supervision, Inspection and Administration)						\$	
G. TOTAL COST						\$	
H. DESCRIPTION OF ABOVE							
I. EXPLANATION OF CONTINGENCY, DESIGN AND SUPERVISION COSTS							
ITEM 17F				ITEM 17G			
				A - E DESIGN		A - E SUPERVISION	
				\$		\$	
TYPED NAME, TITLE AND STATION OF PERSON PREPARING REPORT				SIGNATURE OF PERSON PREPARING REPORT			

DD FORM 813-1  
1 MAY 63

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

4270.10 (Incl 3)  
Jun 3, 63

REPORT OF COST AND ANALYSIS - PAVING				DATE PREPARED		REPORT CONTROL SYMBOL	
TO:				FROM:			
1. TITLE (Invitation for Bid or Specification)							
2. TITLE (Individual Item)							
3. STATION				4. LOCATION			
5. INVITATION (Specification) NUMBER				6. NO OF BIDDERS		7. TYPE OF CONTRACT AND CONTRACT NUMBER	
8. DATE OF BID OPENING		9. DATE OF AWARD			10. DATE CONTRACT NEGOTIATED		
11. COMPLETE PROJECT (Invitation for Bid)				12. INDIVIDUAL ITEM			
LOW BIDDER		BUDGET		GOV'T ESTIMATE		LOW BIDDER	
\$		\$		\$		\$	
13. TYPE PAVEMENT <input type="checkbox"/> RIGID <input type="checkbox"/> FLEXIBLE <input type="checkbox"/> OTHER (Specify)				14. CONSTRUCTION PERIOD		15. CLASSIFICATION <input type="checkbox"/> RUNWAY <input type="checkbox"/> TAXIWAY <input type="checkbox"/> APRON <input type="checkbox"/> ROAD <input type="checkbox"/> OTHER (Specify)	
16. COST BASED ON AWARD				TOTAL (Individual Item)		PER SQUARE YARD	
A. PAVING	WEARING SURFACE	DEPTH (Inches)	QUANTITY (CY)	\$	\$		
	BASE COURSE	DEPTH (Inches)	QUANTITY (CY)	\$	\$		
	SUB-BASE COURSE	DEPTH (Inches)	QUANTITY (CY)	\$	\$		
	B. EXCAVATION AND GRADING	QUANTITY (CY)	PER CY	\$	\$		
C. DRAINAGE				\$	\$		
D. OTHER RELATED WORK (Specify in Item 17)				\$	\$		
E. GOVERNMENT FURNISHED EQUIPMENT AND MATERIALS (Financed from Construction funds - Specify in Item 17)				\$	\$		
F. SUB-TOTAL				\$	\$		
G. CONTINGENCIES				PERCENT OF ITEM 16f		\$	
H.	(1) PLANNING	PERCENT OF ITEM 16f PLUS 16g.		\$	\$		
	(2) OVERHEAD	PERCENT OF ITEM 16f PLUS 16g.		\$	\$		
I. TOTAL COST				\$	\$		
17. DESCRIPTION OF ABOVE							
18. EXPLANATION OF UNUSUAL COSTS UNDER ITEMS 16f AND 16g							
ITEM 16f				ITEM 16g			
A-E DESIGN				A-E SUPERVISION			
\$				\$			
TYPED NAME, TITLE AND STATION OF PERSON PREPARING REPORT				SIGNATURE OF PERSON PREPARING REPORT			

DD FORM 813-2  
1 MAY 63

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

1 September 1960

REPORT OF HOUSEHOLD GOODS STORAGE ACTIVITIES										DATE OF REPORT		REPORT FOR QUARTER ENDING		REPORT CONTROL SYMBOL					
TO										FROM									
SERVICE	LOTS BROUGHT FORWARD		LOTS PLACED IN		LOTS REMOVED FROM		LOTS REMAINING IN		DOLLAR VALUE OF INVOICES PROCESSED FOR PAYMENT		MILITARY STORAGE								
	NO	CWT	NO	CWT	NO	CWT	NO	CWT	NO	CWT	NO	CWT							
ARMY																			
NAVY																			
AIR FORCE																			
MARINE CORPS																			
COAST GUARD																			
TOTAL																			
REMARKS																			

PREVIOUS EDITION OF THIS FORM IS OBSOLETE

DD FORM 1166

INCLOSURE 3

TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY										PAGE	OF	PAGES
1 FROM (Installation Activity Service)		2 OPERATING UNIT		3 DATE		4 JOR NUMBER		5 SER A NUMBER		6 CONTRACT NUMBER		
9 TO (Installation Activity Service)		10 OPERATING UNIT		11 DIS TRICY CODE		12 OPERATING UNIT		13 AC COUNTING OFFICE NUMBER		14 AC COUNTING OFFICE NUMBER		
15 CATEGORY NO CODE		16 FACILITY (Location description)		17 NO OF TYPE UNITS		18 UNIT MEAS		19 TOTAL QUANTITY		20 COST		
17		18		19		20		21		22		
23 DRAWING NUMBERS		24 REMARKS		25		26		27		28		
29 STATEMENT OF COMPLETION. The facilities listed herein are in accordance with maps, drawings, and other data submitted to the receiving activity and are accepted for transfer to the receiving activity on the reverse side.										30 ACCEPTED BY SIGNATURE		31 DATE
32 SIGNATURE OF TRANSFEROR										33 TITLE (Last Name, First Name, Middle Initial)		34 PROJECT NUMBER

DD FORM 1354  
1 NOV 61



DD FORM 1398  
1 OCT 62

PART B - COSTS				PART C - DESIGN DATA							
1. COST		2. GOVERNMENT ESTIMATE		3. CONTRACT AWARD		4. FINAL COST					
TOTAL \$		\$ PER UNIT		TOTAL \$		TOTAL \$					
a. TOTAL COST											
b. BASIC UNITS											
c. (L, S, O, H)											
d. SUPPORT COSTS											
e. (D, L, S, O, H)											
f. LAND ACQUISITION											
g. NO ACFT											
1. TYPE OF UNIT		COMPOSITION		2. BASIC COST		3. CAR SHELTER		4. STORAGE		5. TER. PORCH	
UNITS		SINGLE	DUPLEX	ROW	STYLE	BATHS	AREA	RAGES	PORTS	SIDE	SIDE
GENERAL BR											
COLONEL BR											
FIELD GRADE 3 BR											
FIELD GRADE 4 BR											
JUNIOR OFF 2 BR											
JUNIOR OFF 3 BR											
JUNIOR OFF 4 BR											
ENLISTED 2 BR											
ENLISTED 3 BR											
ENLISTED 4 BR											
6. DESIGN OUTLINE				INTERIOR FINISHES							
a. SUBSTRUCTURE				(1) WALLS, CEILINGS							
				(2) BATH WAINSCOT							
b. EXTERIOR WALLS				(3) FLOORS PRINCIPAL							
				KITCHEN							
c. ROOF TYPE				LANDSCAPING							
				SEED							
d. WINDOWS				FOUNDATION							
				SIDEWALKS							
e. SCREENS				CEILINGS							
				HANGING							
f. COOLING TYPE				DISPOSALS							
				MAST							



STATEMENT OF FACILITIES AND ASSIGNMENT										REPORT CONTROL SYMBOL	
3		4		5		6		7		8	
MILES		DIRECTION FROM		LOCATION OF INSTALLATION TOWN OR CITY AND STATE		REPORT PERIOD FROM TO		FISCAL YEAR		DEPARTMENT	
FACILITY		GEN. FLAG OFFICERS		SENIOR OFFICERS		FIELD GRADE OFFICERS		JUNIOR OFFICERS		ENLISTED MEN	
		UNITS	ASSIGNMENT FACTOR	UNITS	ASSIGNMENT FACTOR	UNITS	ASSIGNMENT FACTOR	UNITS	ASSIGNMENT FACTOR	UNITS	ASSIGNMENT FACTOR
		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
a TOTAL											
b BEDROOMS											
11) NO BEDROOMS											
12) 1 BEDROOM											
13) 2 BEDROOMS											
14) 3 BEDROOMS											
15) 4 BEDROOMS											
16) 5 OR MORE BEDROOMS											
c APPLIANCES (Govt owned)											
17) AIR COOLING COMPLETE											
18) AIR COOLING PARTIAL											
19) DISH WASHER											
20) GARBAGE DISPOSAL											
21) CLOTHES WASHER											
22) CLOTHES DRYER											
23) FREEZER											
d DOMESTIC QUARTERS											
e COST OF FURNITURE, FURNISHINGS AND HOUSEHOLD EQUIPMENTS											

DD FORM 1411 JAN 66





FUND  
Reconciliation of Annual Budget with FYPD  
FY \_\_\_\_\_

Program Element \_\_\_\_\_

Detail (1)	PERSONNEL			OPERATING COSTS		
	Civilian Personnel	EY Strength	Military EY Strength	In Thousands of Dollars		
	Direct Hire	Direct Hire	Contract Hire			
	U.S.	Foreign	Foreign	Total Officer	Enlisted	Total Fund Pers.
	(2)	(3)	(4)	(5)	(6)	(7)
				(8)	(9)	(10)
						(11)

Base 2/

PCD Action (List Separately by Number)

Dept. Reprogramming 3/

Oper. Variance 4/

Total Budget

Submission

1/ Include retirement costs.

2/ FYDP on date specified as base for budget review.

3/ Reprogramming in accordance with DOD Instruction 7045.7 and itemized by specific action.

4/ Itemized and explained by specific change.

NOTE: A separate exhibit is required for current and budget fiscal years. This exhibit will be prepared for all program elements, except those affecting MAC, MSTs, and MTMTs.

PERSONNEL OCCUPYING ARMY FAMILY HOUSING PART 1 - OFFICERS AND WARRANT OFFICERS (AR 210-50)		NAME OF INSTALLATION		REPORTS CONTROL SYMBOL ENG-186		Page 1 of 4 Pages									
SECTION 1 - OCCUPIED BY DEPARTMENT OF THE ARMY OFFICERS AND WARRANT OFFICERS		AS OF DATE													
CATEGORY OF HOUSING	C-10	C-9	C-8	C-7	C-6	C-5	C-4	C-3	C-2	C-1	W-4	W-3	W-2	W-1	TOTAL OCCUPIED
a. TOTAL (Lines b plus c)															
b. TOTAL (Lines (1) thru (11))															
(1) Appropriated Fund - Before FY 50 Appropriation															
(2) Appropriated Fund - FY 50 and After															
(3) Appropriated Fund - Relocatable															
(4) Conduit															
(5) Wherry-Acquired															
(6) Leased															
(7) Foreign Source															
(8) Surplus Commodity															
(9) Other															
(10) & (11) Other															
c. SUBTOTALLED TOTAL (Lines (12) thru (17))															
(12) Leased															
(13) Foreign Source															
(14) Public Housing															
(15) Rental (Outside) Housing															
(16) Trailers															
(17) Other															
SECTION 2 - OCCUPIED BY OFFICERS AND WARRANT OFFICERS OTHER THAN DEPARTMENT OF THE ARMY															
CATEGORY OF HOUSING AND UNIFORMED SERVICE	O-10	O-9	O-8	O-7	O-6	O-5	O-4	O-3	O-2	O-1	W-4	W-3	W-2	W-1	TOTAL OCCUPIED
a.															

DA Form 2576-R, 1 Sep 65

Previous editions of this form are obsolete.

Figure 1. DA Form 2576-R.



PFISSIONAL OCCUPATION ARMY FAMILY HOUSING PART II - ENLISTED MEN (AR 210-50)		NAME OF ENLISTED MAN		REPORTING PERIOD 1966		Page 2 of 2 Pages	
CATEGORY OF HOUSING		SECTION I - OCCUPATION BY DEPARTMENT OF THE ARMY ENLISTED MEN		SECTION II - OCCUPATION BY OTHER DEPARTMENT OF THE ARMY		SECTION III - OCCUPATION BY OTHER DEPARTMENT OF THE ARMY	
		E 1 E 2 E 3 E 4 E 5 E 6 E 7 E 8 E 9 E 10 E 11 E 12 E 13 E 14 E 15 E 16 E 17 E 18 E 19 E 20 E 21 E 22 E 23 E 24 E 25 E 26 E 27 E 28 E 29 E 30 E 31 E 32 E 33 E 34 E 35 E 36 E 37 E 38 E 39 E 40 E 41 E 42 E 43 E 44 E 45 E 46 E 47 E 48 E 49 E 50 E 51 E 52 E 53 E 54 E 55 E 56 E 57 E 58 E 59 E 60 E 61 E 62 E 63 E 64 E 65 E 66 E 67 E 68 E 69 E 70 E 71 E 72 E 73 E 74 E 75 E 76 E 77 E 78 E 79 E 80 E 81 E 82 E 83 E 84 E 85 E 86 E 87 E 88 E 89 E 90 E 91 E 92 E 93 E 94 E 95 E 96 E 97 E 98 E 99 E 100		E 1 E 2 E 3 E 4 E 5 E 6 E 7 E 8 E 9 E 10 E 11 E 12 E 13 E 14 E 15 E 16 E 17 E 18 E 19 E 20 E 21 E 22 E 23 E 24 E 25 E 26 E 27 E 28 E 29 E 30 E 31 E 32 E 33 E 34 E 35 E 36 E 37 E 38 E 39 E 40 E 41 E 42 E 43 E 44 E 45 E 46 E 47 E 48 E 49 E 50 E 51 E 52 E 53 E 54 E 55 E 56 E 57 E 58 E 59 E 60 E 61 E 62 E 63 E 64 E 65 E 66 E 67 E 68 E 69 E 70 E 71 E 72 E 73 E 74 E 75 E 76 E 77 E 78 E 79 E 80 E 81 E 82 E 83 E 84 E 85 E 86 E 87 E 88 E 89 E 90 E 91 E 92 E 93 E 94 E 95 E 96 E 97 E 98 E 99 E 100		E 1 E 2 E 3 E 4 E 5 E 6 E 7 E 8 E 9 E 10 E 11 E 12 E 13 E 14 E 15 E 16 E 17 E 18 E 19 E 20 E 21 E 22 E 23 E 24 E 25 E 26 E 27 E 28 E 29 E 30 E 31 E 32 E 33 E 34 E 35 E 36 E 37 E 38 E 39 E 40 E 41 E 42 E 43 E 44 E 45 E 46 E 47 E 48 E 49 E 50 E 51 E 52 E 53 E 54 E 55 E 56 E 57 E 58 E 59 E 60 E 61 E 62 E 63 E 64 E 65 E 66 E 67 E 68 E 69 E 70 E 71 E 72 E 73 E 74 E 75 E 76 E 77 E 78 E 79 E 80 E 81 E 82 E 83 E 84 E 85 E 86 E 87 E 88 E 89 E 90 E 91 E 92 E 93 E 94 E 95 E 96 E 97 E 98 E 99 E 100	
1. TOTAL (Lines 1-10)							
2. TOTAL (Lines 1-10) - Before FY 50 Apportionment							
3. TOTAL (Lines 1-10) - FY 50 and After							
4. Appropriate Fund - Relocatable							
5. Capital							
6. Lease							
7. Foreign Source							
8. Other							
9. Subsidized							
10. Other							
11. Foreign Source							
12. Other							
13. Foreign Source							
14. Other							
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95. Foreign Source							
96. Other							
97. Foreign Source							
98. Other							
99. Foreign Source							
100. Other							

Figure 2. DA Form 25-6-1-R.

# AR 105-90

with respect to Army, Navy, and Air Force requirements. When such public announcement is made, the Chief of Engineers and the using command will initiate action immediately to assemble the necessary data for disposal. The data required to be prepared and forwarded is itemized in paragraph 8. In order to expedite the preparation and forwarding of such data and to avoid duplication of effort, the using command and the Chief of Engineers will assure close coordination and will designate points of contact as appropriate. At the earliest practicable date the using command will transmit such data through channels to DCSLOG, with copies to the Chief of Engineers. Upon receipt of such copies, the Chief of Engineers, after coordination with DCSLOG, will, where appropriate, prepare and forward a disposal report to the Department of Defense for approval, as required by applicable regulations and for notification to the Armed Services Committees as required by Title 10, United States Code, Section 2662. Whether neither Department of Defense nor Secretary of the Army approval, nor reports to the Armed Services Committees are required, DCSLOG will review the disposal data transmitted by the using command and will authorize the Chief of Engineers to proceed with the disposal action.

**7. Procedure when command desires to excess Army-owned real estate, including easements.** *a. Real estate no longer required.* When real estate (except as set forth in para. 15, 16, and 17) is not needed for the requirements of a using service, a recommendation that the property be placed in excess status will be made by the installation commander and submitted (in triplicate) through channels to the Deputy Chief of Staff for Logistics. The recommendation will contain the information itemized in paragraph 8.

*b. DCSLOG review.* Upon receipt of the excess recommendation, the Deputy Chief of Staff for Logistics will determine whether disposal action should proceed, and, if affirmative, will transmit the excess recommendation to the Chief of Engineers for completion of screening action, so far as applicable to the requirements of the Army, Navy, and Air Force and for consolidation of data with respect to the proposal. The Chief of Engineers will transmit to DCSLOG, for resolution, any requests received as the result of screening (para. 10).

*c. Command installation.* If the disposal of a command installation, or portion thereof, does not require clearance by the Office, Secretary of Defense, the Deputy Chief of Staff for Logistics will approve the disposal in accordance with applicable laws and regulations.

*d. Industrial installation.* If the disposal of an industrial installation, or portion thereof, does not require clearance by the Office, Secretary of Defense, the Chief of Engineers will report the real estate recommended for excess to the Assistant Secretary of the Army, through DCSLOG, for approval of the disposal in accordance with applicable laws and regulations.

*e. Department of Defense approval—command or industrial installation.* If the disposal of all or portions of command or industrial installations requires the approval of the Office, Secretary of Defense, the Chief of Engineers will report the real estate recommended for excess to the Office of the Assistant Secretary of Defense, through DCSLOG, and through the Office, Assistant Secretary of the Army. There will be included in such report, if applicable, information relating to the property to be transferred to the Department of Navy or Air Force and any data necessary to give the Armed Services Committees the notices required by Title 10, United States Code, Section 2662.

**8. Data required for excessing and disposal.** *a. Location, acreage, and identification of the property including appropriately marked map or plot which delineates the real estate tract boundaries as well as the affected improvements.*

*b. Brief description of the improvements, including present condition.*

*c. Purpose for which used. Indicate whether present missions will continue and, if so, the proposed location and whether such missions will be merged with other similar missions.*

*d. Reasons for disposition. (If there is a Department of Army or Department of Defense public announcement the reasons given therein may be cited.)*

*e. Interest held by the United States in the land.*

*f. Date of availability for excess status.*

*g. Contractual commitments, if any, affecting disposition.*

*h. Auxiliary facilities and recommended disposition.*

TAGD 971A

Commitments to other Army agencies, military departments, or Federal agencies which might affect disposition.

j. Preliminary statement as to the kind and cost of neutralization (decontamination) work to be performed in compliance with paragraph 11 or a statement by the responsible officer that because of the previous use of the installation, no such work is required.

k. Statement as to whether the area involved includes a post cemetery; if so, summary of record of interments maintained in accordance with AR 210-190.

l. Statement as to whether the area involved includes a private cemetery; if so, submit the following information:

- (1) Name of private cemetery or burial plot.
- (2) Owned by the United States or reserved to former owners.
- (3) Number of acres (located on map that accompanies excess report) and approximate number of occupied and unused grave sites.
- (4) Names and addresses of next of kin of the deceased interred, if known.
- (5) Names of any local communities or groups that have shown or might have an interest in acquiring the burial plots or cemeteries.
- (6) Statements explaining the current arrangements and legal responsibilities for maintenance of the cemetery, as between the Government and next of kin or cemetery associations; whether the cemetery is full and dormant or is being used actively to accommodate additional burials; and any contractual relationships concerning use, visitation, access across Government property, and any other details which might affect appropriate disposal action.

m. A statement from the appropriate Division or District Engineer as to whether the estimated value of the property involved is or is not in excess of \$50,000. A detailed appraisal is not necessary since the purpose is to determine the echelon at which the final disposal proposal can be approved.

n. The annual operation cost, if any, and maintenance cost of the installation in an inactive status, including types and sources of funds.

o. Estimated number of personnel who will lose their jobs upon disposal of the installation.

p. For an industrial installation, there will be

included sufficient data regarding the physical composition of the installation to indicate the production potential as well as the designed use of the property together with the following information:

- (1) Terms, conditions, restrictions, and reservations recommended for inclusion in any disposal of the installation. If it is proposed that the property is to be disposed of subject to recapture or to future production rights, a specific recommendation will be made as to whether or not the property should be designated for inclusion in the National Industrial Reserve under National Industrial Reserve Act of 1948 (Public Law 383, 80th Cong., 62 Stat. 1225), as amended (50 U.S.C. 451-462). If the recommendation is that such property be designated for inclusion in the National Industrial Reserve, full justification for such action will be submitted.
- (2) Information and data available to the using service considered pertinent to a determination by the Secretary of the Army that disposal of the installation under the terms, conditions, restrictions, and reservations outlined will be in the interest of national defense.

**9. Responsibility of Chief of Engineers.** a. The Chief of Engineers is responsible for accomplishing the disposal of excess and surplus real estate located in the United States, Puerto Rico, Virgin Islands, and the Panama Canal Zone, in accordance with applicable laws and regulations, and for providing for the temporary use of such excess and surplus real estate as it may be available pending its disposition. This will include but will not necessarily be limited to reports of excess real estate to disposal agencies, transfers of excess real estate to other military departments or to other Federal agencies and sales of surplus real estate.

b. As appropriate, the Chief of Engineers will furnish commanders with information copies of pertinent disposal actions, when decisions are made to proceed with disposal.

c. The Chief of Engineers is responsible for providing notices to the Committees on Armed Services of the Senate and House of Representatives and such other information and testimony as they may desire with respect to the disposal of real estate pursuant to the requirement of Title 10,

## MAJOR ARMY COMMAND

1. NAME OF EXISTING FACILITY: Not applicable to planned additional new facilities.

2. LOCATION OF EXISTING FACILITY AND PROPOSED LOCATION OF NEW FACILITY: Since exact location of each new facility will be dependent on consideration of various proposals during contract negotiations subsequent to approval of a basic program, the proposed location will be shown by indicating the general area in which new storage is required, e.g., within 50 miles from Pecos, Texas.

3. TOTAL CAPACITY BY PRODUCT: New facility.

4. BASIS OF REQUIREMENT: Indicate whether facility required for support of a specific installation or for fulfillment of a reserve requirement.

5. TYPE OF PROTECTION DESIRED: See paragraph 3 of this regulation for types of protection. Protection will normally be limited to dispersal of the facility or to utilization of floating roof as a protective construction measure where this degree of protection will suffice. However, when required, a greater degree of protection may be provided under the terms of this Program.

6. PRIORITY AND FISCAL YEAR ACQUISITION PLANNED: In the evaluation of each facility for assignment of priorities for addition of protective construction measures or dispersal of facility, consideration will be given to evaluation of related military owned petroleum storage facilities which was made in accordance with the current protective construction policy contained in the construction annex to the DA program document. The priorities will be stated in terms of categories "A," "B," "C," and "D," as prescribed by JCS Pub 3, Joint Logistics and Personnel Policy and Guidance (C). Show the fiscal year during which it is planned to enter into a long term storage contract for each particular facility and the proposed length of the contract period.

7. ESTIMATED COST PER YEAR: To be completed by Army Materiel Command.

8. ESTIMATED COST OF EACH FACILITY: Show the estimated cost for each facility if it were to be constructed and owned by the Government (for comparative purposes).

*Form 1 - Form for submission of information to U.S. Army Materiel Command*

(HNGMC)

By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,  
Major General, United States Army,  
The Adjutant General.

HAROLD K. JOHNSON,  
General, United States Army,  
Chief of Staff.

Distribution:

To be distributed in accordance with DA Form 12-9 requirements for Real Estate:  
Active Army: D. NG: None. USAR: None.

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3

## APPENDIX

## SUPPORTING DATA FOR MINOR CONSTRUCTION PROJECTS

1. **Purpose.** This appendix provides guidance for the completion of the required documents required as part of DD Form 139 used in requesting approval of minor construction projects.

2. **Broad considerations.** a. Guidance is based on Department of the Army experience in support of minor construction projects submitted to appropriate secretarial level for approval.

b. Application of this guidance will accelerate review and processing of minor construction projects.

3. **Preparation of cost estimates.** a. Requirements will vary according to complexity of the work to be performed. For typical cost estimates covering a new construction and a conversion project, see examples 1 and 2. These examples are intended primarily to indicate format.

b. Cost estimates will be prepared in sufficient detail to—

- (1) Indicate the scope of direct in-house and/or contract work, quantities, unit costs (each unit cost will include, as applicable, materials; labor; equipment use; contractor's bond, insurance, overhead, and profit) and breakdown between funded and unfunded project costs. Lump sum entries will not be used except for minor ancillary requirements.

- (2) Permit evaluation in the Office of the Chief of Engineers

c. A contingency item will be included. It generally will be 10 percent (but in no case will it exceed 15 percent) of the total estimated direct costs for funded and unfunded project costs.

d. Government costs for supervision, inspection, and administration (S&A) of a project to be performed by—

- (1) A Corps of Engineers District, will be at the rate of 6½ percent applied as in (2) below. (Exception: If the S&A rate currently announced by the Chief of Engineers is different than 6½ percent, use that announced rate.)
- (2) In-house forces, will be at the estimated cost not to exceed the rate indicated in (1) above, applied to the estimated project

direct cost plus contingencies, funded and unfunded.

e. Design will be included as a unfunded project cost. Any estimated in-house design costs, or any combination of in-house design costs, A-E fee, and cost of administering the A-E contract exceeding 6 percent must be explained. The basis for computation of the percentage for design will be total estimated project funded and unfunded direct costs plus contingencies. The consideration paid to an A-E under any fixed-price type contract for Title 1 services may not be more than 6 percent of the estimated cost of the public work or utilities project (or portion thereof) for which the A-E undertakes to perform such services. APP 1-450.4(f)(1).

f. Any high estimated costs resulting from unusual factors will be explained. Examples of factors causing high cost are—

- (1) Presence of rock in areas to be excavated or graded;
- (2) Presence of water in excavation;
- (3) Necessity of carrying excavation for foundations or utilities considerable depths;
- (4) Unfavorable climatic conditions which limit construction period;
- (5) Remoteness of the installation from labor market and material source.

4. **Sketches.** a. Sketches will show all work to be performed and will be in sufficient detail to permit review of the cost estimate. Unless exceptional conditions render their submission appropriate to support the cost estimate, elevations and sections will not be depicted. Ceiling heights, type of floor, types of partitions, type of sprinkler system, and schedules of interior finishes will be noted on sketches. Layouts will show floor plan (with windows, stairs, doors, and the like); location of ductwork, radiation, plumbing fixtures, lighting, electric panels, and the like; location and capacities of principal items of installed building equipment (air conditioners, boilers, and other items of installed building equipment) and major items of equipment in place; dimensions and type of access roads, drives, parking areas, walks, and

E. Executive Management Data Use Identifiers  
Obtained from JCS Documents

Outline of major sections

- 1 General
- 2 Requirements
- 3 Investment
- 4 Operations and maintenance

- 1 General
- 1.0 Effective date (of installation reference data)
- 1.1 Installation/"non-installation" data
  - 1.1.1 Name, identification codes
    - Complex name
    - Logistics planning & reporting (LPR) code
  - 1.1.2 Location
    - Country
    - Geographical location
    - Facilities location
  - 1.1.3 Command
  - 1.1.4 Status/function
    - Occupancy environment
      - Peacetime
      - Contingency
      - Mobilization
      - Day on which operation begins
    - Base rights
    - Prepositioning facilities
    - Cooperative logistics facilities
    - Active/mission
    - Facility exists
    - Facility under construction
    - Construction or activation required
    - Facility exists & is being improved or augmented
    - Facility exists & will require additional improvement or augmentation
    - Facility under construction & will require additional improvement or augmentation

- Facility under construction & will require additional improvement or augmentation
- 1.1.4 Status/function (cont.)
  - Facility exists, is being improved or augmented, and will require additional improvement or augmentation
- 1.1.5 F.H. defense transfer account
- 1.1.6 Locality data
- 2 Requirements
  - 2.1 ACN (crossover to 1)
  - 2.EY.1 General
    - Operations Plan
  - 2.EY.2 Tenants/users/operators, incl. joint agencies
  - 2.EY.2.1 Name/control code, command echelon data
    - Force & command relationship
    - Unified or specified
    - Command
    - USBRO code
  - 2.EY.2.2 Full strength
    - Mil pers (required)
    - U.S. civilians
    - Non-U.S. civilians
  - 2.EY.2.3 Authorized
  - 2.EY.2.4 Actual/assigned
    - Existing mil pers
    - Existing U.S. civilian
    - Existing Non-U.S. civilian
  - 2.EY.2.5 Frequency and/or type of utilization
  - 2.EY.3 Permanent party
  - 2.EY.3.1 Identification and command echelon data
    - UIC
  - 2.EY.3.2 Full strength
  - 2.EY.3.3 Authorized
  - 2.EY.3.4 Actual

- 2.2 Facility utilization planning factors
  - Planning factors
    - Required value
    - Required acreage
  - Protective construction
  - Policy
  - Civil affairs policy
  - Construction standards
  
- 3 Investment (construction)
  - 3.1 Guidance
    - Plan or program being added or changed
  - 3.2 Project/line item
    - 3.2.1 General identification DUI's
    - 3.2.2 Quantitative data DUI's
    - 3.2.3 Contract data
      - Estimated completion year
  - 3.3 Facility
    - 3.3.1 General
      - Facility type
    - 3.3.2 Legal
      - International agreements
      - Lease length
      - Lease expiration date
      - Status of rights:
        - Rights must be obtained
        - Facility available for U.S. occupancy
        - Only partial rights exist, additional required
        - Rights negotiations
    - 3.3.3 Cost/value
      - Lease annual
      - Existing dollar value
      - Estimated cost \$



3.3.4	Description
	Item
	Quantity
	Unit of measure
	Acres
	Barrels
	Beds
	Bldgs.
	Chairs
	Ft <sup>3</sup>
	ea.
	fam. units
	Ft, linear
	Gal.
	in.
	long/tons
	Men
	Measurement tons
	Statute miles
	Short tons (2,000 lbs.)
	Ft <sup>2</sup>
	Yd <sup>2</sup>
	Yd. linear
	Man hrs
	Time
	Existing acreage
3.4	Undistributed funds
	ACN of installation
4	Operations and maintenance
4.1	ACN
4.PE.1	Maintenance costs/assets
4.PE.1.1	Housekeeping operations costs

- 4.PE.1.1.1 DOD functional area code (contract supplied) by labor,  
materials, and supplies, other
- 4.PE.1.1.2 Government supplied (same funct. code areas, as applicable)
- 4.PE.1.2 Inventory
- 4.PE.2 Number of lots of household goods in storage
  - Commercial
  - Military controlled

F. Reporting Requirements Related to Directives Listed in Subsection A

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Dir: 1225.5/				
DD-I&L(Q)802 { DD Form 1405 Format A	Army National Guard Army Reserve Naval and Marine Corps Reserve Air National Guard Air Force Reserve	ASD (I&L)	Quarterly/ 31 Mar, 30 Jun, 30 Sep, 31 Dec	60 days after close of calendar quarter
B 93 DD-I&L(SA)577 DD Form 1406	Same as above	ASD (I&L)	Semi-annually/ 31 Dec, 30 Jun	60 days after close of period covered
DOD Dir: 3005.2/ DD-I&L(A)641	Military Depts. DSA	Sec. of Army, Navy, Air Force Director, Defense Comm. Agency Director, DSA Director, Office of Civil Defense Each OEP Regional Director Each GSA Regional Director Each Civil Defense Regional Director ASD (I&L)	Annually/ 30 Jun	1 Oct

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY AS OF DATE	BY DATE
DOD Instr. 4100.33/ DD-I&L(A)799	Military Depts. Defense Agencies	ASD (I&L)	Updated annually	
DOD 4105.1/ DD-I&L(M)510 51' 6 5.5 685 673 517 619 DD-I&L(Q)773 774 520 521 522 620 674 720 809 DD-I&L(A)810	Military Depts. DSA	ASD (Comp), Attn: Directorate for Statistical Services	18 monthly, quarterly, or annual recurring Defense Procurement Reports	
DOD 4105.56/ DD-I&L(Q)559	Military Depts.	ASD (I&L)	Quarterly/ 31 Mar, 30 Jun, 30 Sep, 31 Dec	30 days after end of quarter

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	DATE
DOD Instr. 4140.18/ DD-I&L(SA)701 702 703	DOD Components (Military Services, DSA)	OASD (comptroller), Directorate of Statistical Services	Semiannually/ 31 Dec, 30 Jun	75 days following end of reporting period
DOD Instr. 4145.5/ DD-I&L(SA)1429	Military Services DSA For each installation	ASD (Comptroller), Attn: Directorate for Statistical Services	Annually/ 31 Dec or Semiannually/ 30 Jun, 31 Dec (as indicated)	30, 45, or 60 days (as indicated) after end of reporting period
DOD Dir. 4145.1c/ QMG-200	Using activities	Household Goods Field Office serving area (consolidated reports to Household Goods Commercial Storage Office then to Dept. of Air Force, Dept. of Navy and the Marine Corps)	Quarterly/ 31 Mar, 30 Jun, 30 Sep, 31 Dec	10th of month following report period
DOD Instr. 4150.9/ DD-I&L(A)715 DD-I&L(A)500	DOD components which operate installations	OASD (Properties & Installations)	Annually/ 30 Jun	Part I - 1 Nov Part II - 1 Dec
DOD Instr. 4165.12/ none	DOD components	A - L)	As required/re proposed ac- tions subject to 10 USC 2662	60 days in advance of a proposed closing or deactivation

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Instr. 4165.14/ DD-I&L(A)760	Military Depts.	ASD (I&L) ASD (comptroller)	Annually/ 30 Jun	30 Sep
DOD Instr. 4165.17/ DD-P&I(A)209	Military Depts.	ASD (Properties and Installations)	Annually/ 30 Jun	1 Dec of following fiscal year
DOD Instr. 4165.25/ none	DOD components	DASD (P&I)	As required/to request certain proposed fuel conversions of heating plants	
DOD Instr. 4165.27/ DD-I&L(A)883	Military Depts.	DASD (FH)	Annually/31 Dec	25 Jan
DOD Instr. 4165.28/ DD-I&L(A)498	Military Depts.	OASD (I&L)	annually/30 Jun	31 Aug
DOD Dir. 4165.38/ DD-I&L(A)450	Military Depts.	ASD (I&L)	annually/31 Dec	25 Jan
DOD Instr. 4165.39/ DD-I&L(SA)633	Secretaries of Military Depts. Directors of Defense Agencies	DASD (FH)	Semiannually/ 30 Jun, 31 Dec	30 days after close of reporting period

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Instr 4165.40/ none	Military Depts. Other DOD components which may establish entities for recording and reporting real property	Appropriate installation, activity or service	As required/for transfers and acceptances of real property	
DOD Instr 4165.41/ DD-Comp(A)448	Military Depts.	ASD (Comptroller for Management), Attn: Directorate for Statistical Services	annually/31 Dec	15 Apr
DOD Instr 4165.45/ DD-I&L(A)665	Military Depts. Defense Agencies	Programming Directorate, ODASD (FI)	annually/rc current five year program	15 Sep
DOD Instr 4170.6/ DD-M(A)589	Military Depts.	ASD (M)	annually/30 Jun	1 Sep
DOD Instr 4170.7/ none	Records maintained at each Military Dept.		Update	annually
DOD Instr 4170.8/ none	Records maintained at each Military Dept.		Update	annually



DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Instr 4200.1/ none	Military Depts.	OSD	as established by ASD (I&L)	
DOD Instr 4270.10/ DD-I&L(AR)501	Military Depts.	Director of Constr., ODASD (I&L) COE Chief of Bureau of Yards & Decks, Dept. of Navy Director of Civil Engineer- ing, Dept. of Air Force	For certain contracts after award of contract and on completion of construction	45 days after award, 90 days after completion
DOD Dir 4270.24/ DD-I&L(SA)431 DOD Dir 7040.2/ none Certificate of Urgency Certificate of Cost Incurred	Military Depts.  Installation Commander endorsed by Military Dept. or Defense component Installation Commander	ASD (I&L) ASD (comptroller)  Levels which maintain project file  Levels which maintain project file ASD if project cost is over \$50,000	Semiannually/ 31 Dec, 30 Jun  As required for appropriate projects  Upon physical completion of project	1 Mar, 1 Sep    60 days after completion of project
DOD Instr 7040.4/ none	Military Depts. Defense Agencies	DOD	Annually/as specified by annual call	At the same time as submission of budget estimates for Military Const.

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Instr 7041.3/ none	Military Depts.	OASD (Comptroller)	Annually/with proposed defense investment projects	To accompany appropriate proposed projects in Constr. & Procurement. program budget
DOD Instr 7045.7/ none	DOD components	ASD (comptroller)	When the condition of the proposal meets established criteria	
DOD Instr 7150.3/ none	Military Depts.	OASD (Comptroller)	With every apportionment, reapportionment, program or funding clearance request	
DOD Instr 7220.16/ DD-Comp(SA)737 DD-Comp(OT)6631	DOD Components	DASD (I&L) (Family Housing) DASD (Comptroller)	Semiannually/ 31 Dec, 30 Jun	1 Mar, 10 Sep
DOD Instr 7500.1/ DD-Comp(A)741	DOD Components	OASD (Comptroller) DSS	Annually/30 Jun	1 Oct
DOD Instr 7700.4/ DD-I&L(A)697 DD-I&L(AR)698 DD-I&L(SA)699	System/Project Manager: The Group, Contractor The Group	Director of Contractor Performance Evaluation, OASD (I&L)	Semiannually/ Beginning not later than 1 yr. after date of award of contract	90 days after conclusion of each evaluation

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
DOD Instr 7720.5/ DD-I&L(AR)470	Installation Commanders	DASD (Family Housing), OASD (I&L)	Upon substantial completion Upon termination of contract	Stages I, III, IV 10 days following development Stages I, III, IV
DOD Instr 7730.20/ DD-I&L(Q)595 DD-I&L(SA)596	Military Depts. DSA Defense Atomic Support Agency	DASD (Family Housing)	Quarterly/30 Sep, 31 Dec, 31 Mar, 30 Jun Semiannually/ 31 Dec, 30 Jun	30 days after as of date except 30 Jun report due 60 days after as of date Semiannual report accompanies cor- responding quar- terly report
AR 210-20/ ENG-126	Installation Commanders	Chief of Engineers	As required/ with annual update	1 May 1 Nov
AR 210-50/ ENG-186	Each installation and command or staff agency which reports on DD Form 1410	Chief of Engineers, Attn: ENGM C - IIM	Quarterly/ same as for DD 1410	Same as for DD Form 1410, 10th working day following end of qtr. except 30 Jun

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
ENG 180	Installations under DA jurisdiction reporting on Family Housing inventory Consolidated by each major field command, HQ DA agency, and Superinten- dent, U.S. Military Academy	Chief of Engineers, Attn: ENGMCM-HO	Semiannually/ 30 Jun, 31 Dec	report by 5 <sup>th</sup> work- day after 2d month following end of qtr.
B. 101 AR 405-15/ none	Division or District Engi- neer	Chief of Engineers, Attn: ENGRE-MU	As appropriate for claims	
AR 405-45/ ENG-75(R3)	Installations Appropriate District or Division Engineers	HQ DA Army Field Commanders Certain other Defense Agencies Chief of Engineers, Attn: ENGRE-PI	Quarterly/31 Mar, 30 Jun, 30 Sep, 31 Dec Quarterly/31 Mar, 30 Jun, 30 Sep, 31 Dec	5 working days after end of qtr. 15 <sup>th</sup> workday of month following end of qtr.
ENG-76(R2)	Each Command, mission, or other element of DA having control of certain property in a foreign country			

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
AR 405-80/ none	Installation Commanders	Appropriate major commander or head of using service with certain types being forwarded to DCSLOG	As appropriate to report availability of real estate	
AR 405-90/ none	Using command Chief of Engineers	DCSLOG Chief of Engineers DCSLOG GSA JAG, Attn: Land Division OASD	As appropriate re disposal of certain real estate	
B-102 AR 415-15/ RCS CSGLD-594(R1) RCS CSGLD-1040	Installation Commanders Major Commanders Major Commanders	Chief of Engineers; attn: ENGMC-PA Chief of Engineers, attn: ENGMC-PA	Annually/Upon request Annually/By 10 Nov Annually/By 15 Feb	
AR 415-15 (Draft)/ none	Major Commanders For all installations	Chief of Engineers, attn: ENGMC-PB (ENGMC-PA for punched cards and ENGMC-EP for site plans)	Annually/By 15 Jan	

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
AR 415-22/ none	Director, Defense Supply Agency Major Army Commanders	Armed Services Committee of the Senate and House of Representatives CG, USAMC to be forwarded to DSA and ASD (I&L)	In accordance with Section 2388 of Title 10, U.S. Code as required for certain programs	
AR 415-25/ CSCRD-53(R1)	CG, USAMC CG, CDC Chief of Engineers Chief signal officer TSC Chief, U.S. Army Security Director of Army Research	Chief of Research & Development	Annually/31 Dec 1 Feb	
AR 415-30/ none	Dept. of the Air Force	HQ DA	Annually or more fre- quently as may be war- ranted	In accordance with current directives
AR 415-31/ none	Major Commanders	Chief of Engineers, attn: ENGMCM-EA	As warranted for exception requests	
AR 415-35/ none	Installations	Each level which maintains project files For certain projects copies to DCSLOG	Upon completion of project submit certifi- cate of cost incurred	60 days after physical completion of project

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
AR 420-44/ ENG-113(R2)	Each general operating agency commander Special operating agency commanders	Chief of Engineers, attn: ENGMC-FU	Annually/ 30 Jun	15 workdays after end of fiscal yr. additional comments by special operating agency commanders within 10 workdays thereafter
AR 420-50/ None	Operating Agency Command- ers	Chief of Engineers	As appropriate to request approval of fuel selections and conversions	
AR 420-74/ DD-M(A)670	Installations	Chief of Engineers, attn: ENGMC-FP	Annually/ 30 Jun	1 Aug
AR 420-76/ OSD-1333	Installations Operating Agency Command- ers DA (chief of Engineers)	Operating Agency Command- ers Chief of Engineers, attn: ENGMC-FB Armed Forces Pest Con- trol Board	Monthly/end of mo. Quarterly/31 Mar, 30 Jun, 30 Sep, 31 Dec Annually/31 Dec	15 <sup>th</sup> of month 30 <sup>th</sup> of Apr, Jun, Oct, Jan 14 Feb
DA Cir 415-6/ None	Requires flood hazard statement to be included in DD Form 1391 for MCA projects.			
DA Cir 420-32/ None	Installation Commanders Operating Agency Command- ers	Chief of Engineers, attn: ENGMC-FP	one time/ 30 Jun 69	30 Sep 69 Part 1 15 Oct 69 Part 2

DIRECTIVE/REPORT CONTROL SYMBOL	SUBMITTING AGENCY	RECEIVING AGENCY	FREQUENCY/ AS OF DATE	BY DATE
AR 420-11/ none	Chief of Engineers Operating Agency Commanders	and chief of Engineers, attn: ENGMC-F	Operating Agency Command- after staff visits ers Chief of Engineers, attn: ENGMC-F	
AR 420-16/ ENG-94(R5)	Army Installations Consolidated by Operating Agency Commanders	Chief of Engineers, attn: ENGMC-FM	Annually/ 30 Jun	45 workdays after end of fiscal yr.
AR 420-20/ none	Installation Commanders	Operating Agency Command- ers To be forwarded to Chief of Engineers, attn: ENGMC-F in certain cases	As required for projects	
AR 420-21/ DD-I&L(S/4)431	Operating Agency Command- ers	Chief of Engineers, attn: ENGMC-FM	Semiannually/ 31 Dec, 30 Jun	20 workdays after close of report period
{AR 420-40 {AR 420-42/ none	Operating Agency Command- ers	Defense Fuel Supply Center Copy to Chief of Engineers, attn: ENGMC-FU	Purchase request annually/Upon request	



The following directives impose no recurring reporting requirements significant to facilities:

DOD Dir 4005.15	AR 420-30
DOD Instr 4105.2	AR 420-31
DOD Instr 4165.42	AR 420-32
DOD Instr 4215.13	AR 420-41
DOD Instr 5000.8	AR 420-43
DOD Instr 5100.37	AR 420-46
DOD Instr 7040.5	AR 420-47
DOD Instr 7220.10	AR 420-49
	AR 420-52
AR 210-3	AR 420-53
AR 405-5	AR 420-54
AR 405-10	AR 420-55
AR 405-20	AR 420-56
AR 405-70	AR 420-57
AR 415-10	AR 420-58
AR 415-11	AR 420-62
AR 415-14	AR 420-70
AR 415-16	AR 420-71
AR 415-17	AR 420-72
AR 415-20	AR 420-73
AR 415-28	AR 420-78
AR 415-32	AR 420-79
AR 415-36	AR 420-80
AR 415-50	AR 420-81
AR 420-10	AR 420-82
AR 420-13	AR 420-83
AR 420-14	AR 420-90
AR 420-17	AR 420-94
AR 420-19	AR 503-72
AR 420-22	DA Cir 420-17
AR 420-24	DA Cir 420-22

G. Forms Related to Documents Listed in Subsection A But Not Analyzed for Conversion to Data Use Identifiers

The following forms are included:

- |     |                  |  |
|-----|------------------|--|
| 1.  | DD 1158          | Certificate of Need for Family Housing for Essential Civilian Employees of the Armed Forces  |
| 2.  | DD 1321          | Report on Provision of Family Housing Under Section 809 of the National Housing Act for Essential Civilians Employed at Military Research or Development Installations |
| 3.  | DD 1377          | Tabulation of Family Housing Survey  |
| 4.  | DD 1378          | Determination of Housing Requirements and Project Composition  |
| 5.  | DD 1523          | Military Family Housing Justification  |
| 6.  | DD 1532          | Pest Control Summary Report  |
| 7.  | DODI 4165.12     | Sample Format #1 Acquisition Report  |
| 8.  | DODI 4165.12     | Sample Format #2 Disposal Report   |
| 9.  | DODI 4165.25     | Estimated Cost Comparison of Heating or Power Plant Fuel Conversion  |
| 10. | DOD Dir. 4165.38 | Annual Report on Section 810 Housing Program   |
| 11. | DODI 4165.39     | Justification for Retention of Sub-standard Housing  |
| 12. | DODI 4165.45     | Summary of Available Vacant Rental Housing   |
| 13. | DODI 4170.6      | Format B. Installation FY____ Fish and Wildlife Report   |
| 14. | DODI 4170.6      | Format C. FY____ Fish and Wildlife Summary Report  |
| 15. | DODI 4170.7      | Suggested Format A. Forest Resource Management Report  |
| 16. | DODI 4170.8      | Annual Report. Soil and Water (Land Management ) Conservation Program  |
| 17. | DODI 7041.3      | Format B. Economic Evaluation -- DOD Investments. Detail of Benefits   |

4165.27 (Encl 2)  
Aug 8, 68

CERTIFICATE OF NEED FOR FAMILY HOUSING FOR ESSENTIAL CIVILIAN EMPLOYEES OF THE ARMED FORCES		
FOR THE FEDERAL HOUSING ADMINISTRATION:		
<p>This certification is made in connection with family housing to be purchased or constructed for occupancy by essential, non-temporary civilians employed at the installation named below and to be financed with mortgages insured under the authority contained in Section 809 of the National Housing Act as added by Public Law 574, 84th Congress.</p>		
<hr/> <p>(Name and address of installation)</p>		
<hr/> <p>(Department of the Army, Navy or Air Force)</p>		
<p>In accordance with the provisions of Section 809 of the National Housing Act, as amended, the undersigned, as duly authorized designee of the Secretary of Defense, hereby certifies that:</p>		
<p>the military installation named above is a research or development installation of the Department;</p>		
<p>there is no present intention to substantially curtail the number of essential, non-temporary civilians presently employed or to be employed at the installation by the Department or contractors thereof; and</p>		
<p>_____ units of family housing are required in the area of the installation to provide adequate family housing for such civilian employees.</p>		
<p>Pursuant to the Agreement between the Department of Defense and the Federal Housing Administration, it is further certified that the Military Department <input type="checkbox"/> will <input type="checkbox"/> will not guarantee the Armed Services Housing Mortgage Insurance Fund from loss with respect to insured mortgage loans on the number of units set forth above.</p>		
DATE	TYPED NAME, TITLE, ORGANIZATION, AND ADDRESS OF CERTIFYING OFFICER	SIGNATURE OF CERTIFYING OFFICER
CERTIFICATE NO		
DISTRIBUTION	EXECUTED ORIGINAL TO FHA COMMISSIONER; EXECUTED COPY TO DESIGNATED MILITARY REPRESENTATIVE; CONFORMED COPY TO DASD(FH).	

DD FORM 1158

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

4165.27 (Encl 4)  
Aug 8, 68

REPORT ON PROVISION OF FAMILY HOUSING UNDER SECTION 809 OF THE NATIONAL HOUSING ACT FOR ESSENTIAL CIVILIANS EMPLOYED AT MILITARY RESEARCH OR DEVELOPMENT INSTALLATIONS							REPORT CONTROL SYMBOL		
1 REPORTING DEPARTMENT		2 INSTALLATION AND LOCATION				3 CUMULATIVE REPORT AS OF DECEMBER 31, _____			
CERTIFICATES OF NEED (DD Form 1158)		CERTIFICATES OF EMPLOYEE ELIGIBILITY (DD Form 1159)							
CERTIFICATE NUMBER  a	UNITS  b	TOTAL ISSUED BY CERTIFYING OFFICER  c	PENDING SUBMISSION TO FHA  d	FHA ACTIVITIES					
				TOTAL NUMBER RECEIVED  e	ENDORSED		IN PROCESS  h	REJECTED  i	
WITH MILITARY GUARANTY  f	WITHOUT MILITARY GUARANTY  g								
TOTALS									
4 TOTAL ORIGINAL FACE AMOUNT OF MORTGAGES INSURED BY FHA									
a WITH MILITARY GUARANTY (Column f)				b. WITHOUT MILITARY GUARANTY (Column g)					
5 AUTHENTICATION									
TYPED NAME AND TITLE OF PREPARING OFFICIAL				SIGNATURE OF PREPARING OFFICIAL					
6. REMARKS									

DD FORM 1321  
1 JUL 60

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

4165.45 (Encl 5)  
Jun 9, 65#

CUT ON THIS LINE IF NECESSARY

TABULATION OF FAMILY HOUSING SURVEY				REPORT CONTROL SYMBOL			
1. DATE OF SURVEY		OFFICERS a	ELIGIBLE ENLISTED b	KEY CIVILIANS c	SUBTOTAL (a + b + c) d	OTHER ENLISTED e	TOTAL (d + e) f
REQUIREMENTS	2. TOTAL PERSONNEL STRENGTH						
	3. PERMANENT PARTY HOUSING STRENGTH						
	4. NUMBER OF FAMILIES						
	5. HOUSING REQUIREMENTS FACTOR						
NOT LIVING WITH FAMILY STATUS OF HOUSING	6. NOT LIVING WITH FAMILY (TOTAL 71 + 72)						
	7. NO ADEQUATE HOUSING AVAILABLE						
	8. RACIAL DISCRIMINATION IN HOUSING						
	9. OTHER RACIAL DISCRIMINATION						
	10. OTHER PERSONAL REASONS						
	11. INVOLUNTARILY SEPARATED FAMILIES						
	12. PREFER MILITARY QUARTERS						
	13. PREFER PRIVATE HOUSING						
	14. VOLUNTARILY SEPARATED FAMILIES						
	15. LIVING WITH FAMILY IN AREA (TOTAL 16 + 27)						
	16. SUITABLY HOUSED (SUBTOTAL 17 + 20)						
	17. IN MILITARY CONTROLLED HOUSING						
	18. (PREFER RENTING OFF POST)						
	19. (PREFER OWNING OFF POST)						
LIVING WITH FAMILY IN AREA SUMMARY OF OCCUPIED HOUSING BY TYPE AND PREFERENCE	20. IN PRIVATE HOUSING						
	21. (PREFER MILITARY QUARTERS)						
	22. (PREFER RENTING OFF POST)						
	23. UNSUITABLY HOUSED (SUBTOTAL 24 + 27)						
	24. IN MILITARY CONTROLLED HOUSING						
	25. (PREFER RENTING OFF POST)						
	26. (PREFER OWNING OFF POST)						
	27. IN PRIVATE HOUSING (SUBTOTAL 28 + 32)						
	28. (PREFER MILITARY QUARTERS)						
	29. (PREFER RENTING OFF POST)						
	30. EXCESS DISTANCE						
	31. SUBSTANDARD						
	32. EXCESS COST ONLY (UPPER RANGE)						
	33. LESS THAN \$5						
	34. \$5 TO \$10						
	35. \$10 TO \$25						
	36. \$25 TO \$50						
37. \$50 AND MORE							
HOUSING OCCUPIED IN AREA OWNED	38. IN OWNER OCCUPIED HOUSES (TOTAL 39 + 40)						
	39. SUITABLE IN ALL RESPECTS						
	40. UNSUITABLE (SUBTOTAL 41 + 43)						
	41. EXCESS DISTANCE						
	42. SUBSTANDARD						
	43. EXCESS COST ONLY						
	44. IN OWNER OCCUPIED TRAILERS (TOTAL 45 + 46)						
	45. SUITABLE IN ALL RESPECTS (ON POST)						
	46. UNSUITABLE (SUBTOTAL 47 + 49)						
	47. EXCESS DISTANCE						
	48. SUBSTANDARD (ON POST)						
	49. EXCESS COST ONLY (ON POST)						
	50. IN RENTED HOUSING OFF POST (TOTAL 51 + 52)						
	51. SUITABLE IN ALL RESPECTS						
52. UNSUITABLE (SUBTOTAL 53 + 55)							
53. EXCESS DISTANCE							
54. SUBSTANDARD							
55. EXCESS COST ONLY							
MILITARY	56. IN MILITARY CONTROLLED HOUSING (TOTAL 57 + 61)						
	57. ADEQUATE AS PUBLIC QUARTERS (VACANT)						
	58. MILITARY OWNED (VACANT)						
	59. MILITARY LEASED (VACANT)						
	60. MILITARY SPONSORED (VACANT)						
	61. INADEQUATE AS PUBLIC QUARTERS (VACANT)						
62. NAME AND LOCATION OF INSTALLATION							

DD FORM 1377

#First amendment (Ch 1, 8/1/66)

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

Page 1 of 2 Pages

B-110

Jun 9, 65

## TABULATION OF FAMILY HOUSING SURVEY

73. APT. HOUSING (TOTAL 64 88)		74. PRIVATE RENTAL HOUSING		75. FHA AND VA FLD RENTAL HOUSING		76. MILITARY HOUSING ADEQUATE AT PUBLIC QUARTERS		77. NUMBER OF UNSUITABLE UNITS INSPECTED		78. NUMBER OF INSPECTED UNITS RECLASSIFIED		79. ADJUSTMENT FACTOR	
		EFFECTIVE REQUIREMENTS		SUITABLE HOUSING								DEFICIT	
		NUMBER	PERCENT	MIL. CONTROL	OFF. POST	TOTAL							
		a	b	c	d	e	f	g	h	i	j	k	l
70	0 TO THROUGH E		%										
71	1 AND 2 BEDROOMS		%										
72	3 BEDROOMS		%										
73	4 OR MORE BEDROOMS		%										
74	0'S AND 0-4		%										
75	1 AND 2 BEDROOMS		%										
76	3 BEDROOMS		%										
77	4 OR MORE BEDROOMS		%										
78	0-3 THROUGH 0-1 AND 4-7 THROUGH 4-1		%										
79	1 AND 2 BEDROOMS		%										
80	3 BEDROOMS		%										
81	4 OR MORE BEDROOMS		%										
82	ALL OFFICER GRADES (TOTAL 74 8 74 78)		%										
83	1 AND 2 BEDROOMS		%										
84	3 BEDROOMS		%										
85	4 OR MORE BEDROOMS		%										
86	5 THROUGH 6 4 OR MORE YEARS		%										
87	1 OR 2 BEDROOMS		%										
88	3 BEDROOMS		%										
89	4 OR MORE BEDROOMS		%										
90	ALL ELIGIBLE MILITARY (TOTAL 81 88)		%										
91	1 OR 2 BEDROOMS		%										
92	3 BEDROOMS		%										
93	4 OR MORE BEDROOMS		%										
94	KEY CIVILIANS 0 EQUIVALENT		%										
95	1 AND 2 BEDROOMS		%										
96	3 BEDROOMS		%										
97	4 OR MORE BEDROOMS		%										
98	KEY CIVILIANS 1 EQUIVALENT		%										
99	1 AND 2 BEDROOMS		%										
100	3 BEDROOMS		%										
101	4 OR MORE BEDROOMS		%										
102	ALL ELIGIBLE CATEGORIES (TOTAL: 90 8 90 88)		100%										
103	1 AND 2 BEDROOMS		%										
104	3 BEDROOMS		%										
105	4 OR MORE BEDROOMS		%										
106	6 LESS THAN 4 YEARS THROUGH E 1		100%										
107	1 OR 2 BEDROOMS		%										
108	3 BEDROOMS		%										
109	4 OR MORE BEDROOMS		%										
110. REMARKS													

111. AUTH

B-111

4165.45 (Encl 6)  
Jun 9, 65#

CUT ON THIS LINE IF NECESSARY

DETERMINATION OF HOUSING REQUIREMENTS AND PROJECT COMPOSITION										REPORT CONTROL SYMBOL	
DERIVATION OF LONG RANGE HOUSING REQUIREMENTS		OFFICERS		ENLISTED MEN				CIVILIANS	TOTAL (a + b)		
		OPERATIONAL	STUDENT	OPERATIONAL		STUDENT					
				ELIGIBLE	OTHER	ELIGIBLE	OTHER				
1 TOTAL PERSONNEL STRENGTH											
2 PERMANENT PARTY HOUSING STRENGTH											
3 HOUSING REQUIREMENTS FACTOR											
4 CROSS OUTING REQUIREMENTS											
				OFFICERS	ELIGIBLE ENLISTED	KEY CIVILIANS	TOTAL (a + c)				
							NUMBER	PERCENT			
5 NO SEPARABLE HOUSING REQUIREMENTS									100.0 %		
6 VOLUNTARILY SEPARATED FAMILIES									%		
7 EFFECTIVE HOUSING REQUIREMENTS (5 Minus 6)									%		
8 Programming Limit - %									%		
9 SUITABLE HOUSING ASSETS (Total 10 + 16)									%		
10 MILITARY CONTROLLED ASSETS (Subtotal 11 + 15)									%		
11 MILITARY OWNED - EXISTING									%		
12 MILITARY OWNED - UNDER CONTRACT									%		
13 MILITARY OWNED - APPROVED									%		
14 MILITARY LEASED - EXISTING AND APPROVED									%		
15 OTHER (Specify)									%		
16 NOT MILITARY CONTROLLED (Subtotal 17 + 21)									%		
17 CURRENTLY OCCUPIED - OWNED									%		
18 CURRENTLY OCCUPIED - RENTED									%		
19 CURRENTLY VACANT - PRIVATE FOR RENT									%		
20 CURRENTLY VACANT - MILITARY FOR RENT									%		
21 SECTION 813 UNDER DEVELOPMENT									%		
22 NET HOUSING DEFICIT (7 Minus 9)									%		
23 Programming Deficit (8 Minus 9)									%		
24 NEW CONSTRUCTION									%		
25 OTHER (Specify)									%		
26 MILITARY PROGRAMMING LEVEL - NO (10 + 24 + 25)									%		
27 MILITARY PROGRAMMING LEVEL - PERCENT (26-5)									%		
28 TOTAL PROGRAMMING LEVEL - NO (6+9+24+25)									%		
29 TOTAL PROGRAMMING LEVEL - PERCENT (28 + 3)									%		
30 NEW CONSTRUCTION									%		
31 OTHER (Specify)									%		
32 MILITARY PROGRAMMING LEVEL - NO (26+30+31)									%		
33 MILITARY PROGRAMMING LEVEL - PERCENT (32+5)									%		
34 TOTAL PROGRAMMING LEVEL - NO (28+30+31)									%		
35 TOTAL PROGRAMMING LEVEL - PERCENT (34-5)									%		
36 NEW CONSTRUCTION									%		
37 OTHER (Specify)									%		
38 MILITARY PROGRAMMING LEVEL - NO (32+36+37)									%		
39 MILITARY PROGRAMMING LEVEL - PERCENT (38-5)									%		
40 TOTAL PROGRAMMING LEVEL - NO (34+36+37)									%		
41 TOTAL PROGRAMMING LEVEL - PERCENT (40-5)									%		
42 NEW CONSTRUCTION									%		
43 OTHER (Specify)									%		
44 MILITARY PROGRAMMING LEVEL - NO (38+42+43)									%		
45 MILITARY PROGRAMMING LEVEL - PERCENT (44+5)									%		
46 TOTAL PROGRAMMING LEVEL - NO (40+42+43)									%		
47 TOTAL PROGRAMMING LEVEL - PERCENT (46-5)									%		
48 NEW CONSTRUCTION									%		
49 OTHER (Specify)									%		
50 MILITARY PROGRAMMING LEVEL - NO (44+48+49)									%		
51 MILITARY PROGRAMMING LEVEL - PERCENT (50+5)									%		
52 TOTAL PROGRAMMING LEVEL - NO (46+48+49)									%		
53 TOTAL PROGRAMMING LEVEL - PERCENT (52-5)									%		
54 NAME AND LOCATION OF INSTALLATION											

DD FORM 1378

REPLACES EDITION OF 1 MAR 62 WHICH MAY BE USED.

Page 1 of 2 Pages

Revised 1/66

B-112

4167.44 (Encl 6)  
Jan 9, 65 #

**CUT ON THIS LINE, IF NECESSARY**

QUALITATIVE ANALYSIS OF REQUIREMENTS	REQUIREMENTS			SUITABLE HOUSING			PROGRAM DEFICIT (c Minus f)	FISCAL YEAR 19____ PROJECT
	EFFECTIVE a	PERCENT b	PROGRAM LIMIT c	MILITARY CONTROL d	OFF POST e	TOTAL (d + e) f		
55. 0-10 T THROUGH 0-6		%						
56. 1 AND 2 BEDROOMS		%						
57. 3 BEDROOMS		%						
58. 4 OR MORE BEDROOMS		%						
59. 0-5 AND 0-4		%						
60. 1 AND 2 BEDROOMS		%						
61. 3 BEDROOMS		%						
62. 4 OR MORE BEDROOMS		%						
63. 0-3 - 0-1 AND 4-4 - 4-1		%						
64. 1 AND 2 BEDROOMS		%						
65. 3 BEDROOMS		%						
66. 4 OR MORE BEDROOMS		%						
67. OFFICERS - TOTAL		%						
68. 1 AND 2 BEDROOMS		%						
69. 3 BEDROOMS		%						
70. 4 OR MORE BEDROOMS		%						
71. E 9 - E-4, 4 OR MORE YEARS		%						
72. 1 AND 2 BEDROOMS		%						
73. 3 BEDROOMS		%						
74. 4 OR MORE BEDROOMS		%						
75. MILITARY - TOTAL		%						
76. 1 AND 2 BEDROOMS		%						
77. 3 BEDROOMS		%						
78. 4 OR MORE BEDROOMS		%						
79. KEY CIVS - O EQUIVALENT		%						
80. 1 AND 2 BEDROOMS		%						
81. 3 BEDROOMS		%						
82. 4 OR MORE BEDROOMS		%						
83. KEY CIVS - E EQUIVALENT		%						
84. 1 AND 2 BEDROOMS		%						
85. 3 BEDROOMS		%						
86. 4 OR MORE BEDROOMS		%						
87. ALL CATEGORIES - TOTAL		100.0 %						
88. 1 AND 2 BEDROOMS		%						
89. 3 BEDROOMS		%						
90. 4 OR MORE BEDROOMS		%						
91. REMARKS (If more space is needed, continue on back)								
92. AUTHENTICATION	NAME AND TITLE (Typed or Stamped)			SIGNATURE			DATE	
93. NAME AND LOCATION OF INSTALLATION								

DD FORM 1378  
#First amendment (Ch 1, 8/1/66)

Page 2 of 2 Pages

**B-113**



4165.45 (Encl 10)

Jun 9, 65

PROPOSED PROJECT

1 DATE	2 FISCAL YEAR	MILITARY FAMILY HOUSING JUSTIFICATION				3 DEPARTMENT	4 METALLATION	5
6 LOCATION		7 MISSION				8 COMMENTS ON SPECIFIED ITEMS		
ANALYSIS OF REQUIREMENTS AND ASSETS		OFFICERS a	ELIGIBLE ENLISTED b	KEY CIVILIANS c	TOTAL d			
9. CURRENT GROSS REQUIREMENTS								
9. LESS: VOLUNTARILY SEPARATED FAMILIES								
10. CURRENT EFFECTIVE REQUIREMENTS								
11. LESS: INVENTORY OF ADEQUATE HOUSING								
a UNDER MILITARY CONTROL (1) Military Operated (2) Military Sponsored								
b PRIVATE HOUSING (1) Owned Houses (2) Owned Trailers (3) Occupied Rental Housing (4) Vacant Rental Housing								
12. CURRENT HOUSING DEFICIT								
a Involuntarily Separated Families b Substandard Housing c Excess Cost and Distance Housing								
13. CHANGES IN REQUIREMENTS								
14. PROJECTED EFFECTIVE DEFICIT								
15. LESS: UNDER CONSTRUCTION OR APPROVED								
16. NET PROJECTED EFFECTIVE DEFICIT								
17. PROPOSED PROJECT								
18. UNSATISFIED PROJECTED DEFICIT								
a Included In Relief Factor b Available Per Future Programming								
19. Total Housing Assets, Including Proposed Project, as Percentage of Projected Gross Requirements								
Military		%	%	%	%			
All Housing		%	%	%	%			
20. NARRATIVE								

DD FORM 1523

1 MAR 60

PEST CONTROL SUMMARY REPORT										MONTH OF REPORT		REPORT CONTROL SYMBOL OSD-1333	
FROM: (Installation or Activity) (Include ZIP Code)										AREA DISTRICT COMMAND			
TO: (Include ZIP Code)													
OPERATION		PEST		PESTICIDE		FINAL CONC		CHECK		MAN-HOURS			
NAME	CODE	UNIT	TOTAL PLOTS INFESTED	NAME	CODE	CHECK	CODE	FORM	AMOUNT	UNIT	BS	MS	
I. DISEASE VECTORS													
1													
2													
3													
4													
5													
II. NUISANCE PESTS													
1													
2													
3													
4													
5													
III. STRUCTURAL PESTS AND WOOD PRESERVATION													
1													
2													
3													
4													
5													
IV. STORED PRODUCTS PROTECTION													
1													
2													
3													
4													
5													
V. MISCELLANEOUS PESTS													
1													
2													
3													
4													
5													

DD FORM 1532

4165.12 (Encl 1)  
Feb 6, 67

SAMPLE FORMAT 7/1

ACQUISITION REPORT

DEPARTMENT OF THE \_\_\_\_\_

ACQUISITION REPORT NO. \_\_\_\_\_

Submitted pursuant to Title 10, United States Code, Section 2662

(As Appropriate)

1. Name of Installation  
Using Service  
Interest to be Acquired  
Proposed Action  
Use  
Area  
Cost (One Time)  
(Annual)  
Authorization  
Appropriation
2. Purpose of the Report:
3. Proposed Action:
4. Factors in Support of the Proposed Action:
5. Additional Requirements and Estimated Cost if the  
Proposed Action is only an Increment of Total Needs:

SAMPLE FORMAT #2

DISPOSAL REPORT

DEPARTMENT OF THE \_\_\_\_\_

DISPOSAL REPORT NO. \_\_\_\_\_

Submitted pursuant to Title 10, United States Code, Section 2662

(As Appropriate)

1. Name of Installation  
Using Service  
Interest  
Former Use  
Land Area  
Building Area  
Annual Rental  
Land Cost  
Building & Improvement Cost  
Machinery & Equipment Cost  
Total Cost  
Proposed Action  
Estimated Annual Savings  
Authority for Disposal
2. Purpose of the Report:
3. History:
4. Factors Leading to Conclusions (Rationale Highlights):
5. Proposed Actions, Including Breakdown of Annual Savings  
and Indication of Other Agency Interest (Screening Statement):
6. Indication of ASD(I&L) Approval:
7. (Applicable only to partial disposals)

SUMMARY OF REAL ESTATE DATA\*

	<u>Fee</u> <u>Acres</u>	<u>Interest</u> <u>Cost</u>	<u>Lesser Interest(s)</u> <u>Acres</u>	<u>Cost</u>	<u>Cost of im-</u> <u>provements</u>
Present Holdings		\$		\$	\$
To be Retained	_____	_____	_____	_____	_____
Excess		\$		\$	\$

\*Note: At the discretion of the reporting agency, this tabulation may appear as heading in lieu of an ending summary.

ESTIMATED COST COMPARISON OF HEATING OR POWER

PLANT FUEL CONVERSION

A. For a central heating plant serving 2 or more buildings, give the following data:

1. Number buildings served and total number of square feet heated:
2. Category of building use: (warehouse, shop, administration, mess hall, classroom, etc.)
3. Use of heat: (space heating, hot water, process, industrial, etc., or combination)
4. Size of plant: (MBTU/hour output)
5. Type of plant: (Steam, HW, hot water)
6. Type or brief description of heating equipment:

B. For individual-building plant give the following data:

1. Category of building use: (see A 2 above)
2. Use of heat: (see A 3 above)
3. Building number:
4. Type of heating equipment: (hot-water fire-tube boiler, warm air furnace, etc.)

C. Comparative Data

	Present Fuel	Proposed Fuel*	Proposed Fuel*
1. Fuel and description of firing equipment			(Note 1)

\* Use as many "Proposed Fuel" columns as necessary to show costs of each fuel evaluated in accordance with the requirement of Paragraph V K.

4165.25 (Encl 1)  
Apr 22, 64

C. Comparative Data (Cont'd)

	Present Fuel	Proposed Fuel	Proposed Fuel
--	--------------	---------------	---------------

(Note 2)

2. Efficiency of firing equipment
3. Heating value of fuel
4. Unit fuel cost (delivered to installation)
5. Annual fuel requirements
6. Annual fuel costs
7. Fuel handling costs (Note 3)
8. Ash or residue handling costs (Note 4)
9. Oil heating costs including tank heating, and ignition fuel costs
10. Coal crushing costs
11. Delivery losses including pipeline, truck or RR car, and storage tanks
12. Cost of operation and maintenance of LPG plant and system (Note 5)
13. Operating Personnel Costs:
  - a. Plants with continuous watch
    - (1) Number of men per 24-hour day

Civilian  
Military

B-119

4165.25 (Encl 1)  
Apr 22, 64

C. Comparative Data (Cont'd)

Present Fuel Proposed Fuel Proposed Fuel

- (2) Labor costs
  - Civilian (Notes 6 & 8)
  - Military (Notes 7 & 8)
- b. Plants with intermittent watch
  - (1) Number visits per day and time per visit
    - Civilian
    - Military
  - (2) Number days per year plant operated
  - (3) Labor costs
    - Civilian (Notes 6 & 8)
    - Military (Notes 7 & 8)
- 14. Other operating costs such as electric power for FD & ID fans, oil pumps and burners, coal conveyers, etc. Give details on separate sheets. Do not include costs common to all fuels such as boiler water treatment, M&O of boiler feed water pumps, steamlines, etc.

C. Comparative Data (Cont'd)

Present Fuel Proposed Fuel Proposed Fuel

15. Maintenance & Repair Costs (Note 9)
  - a. Civilian labor (Notes 6 & 8)
  - b. Military labor (Notes 7 & 8)
  - c. Parts and materials
16. Cost of maintenance of gas pipelines and/or bulk (central) fuel oil storage tanks and facilities (pro-rated)
17. Conversion investment (Note 10)
18. Grand total annual costs

D. Justification Summary

1. Present Annual Operating Cost (Item 18 above for present fuel) \$
2. Less proposed annual operating cost (Item 18 above for lowest cost of proposed fuels) \$
3. Estimated Annual Savings \$
4. Annual Savings x 4.452\*\* \$
5. Less total conversion cost (Note 11) \$
- Net savings \$

4165.25 (Encl 1)  
Apr 22, 64

\*\* Factor for 5-year amortization at 4% interest. For those projects submitted under the provisions of Paragraph VL, use a factor of 2.775.



4165.38 (Incl 5)  
Jan 20, 62

ANNUAL REPORT ON SECTION 810 HOUSING PROGRAM

Department of the \_\_\_\_\_

Report as of December 31, 19 \_\_

Installation	FHA Format #1 Handled During Year				Number of Certificates of		Number of Section 810 Units Which were, At End of Year.			
	Total Number Rec'd	Number of Replies Showing		Number Pend- ing at End of Year	Eligibility Issued		In Plans Under Review	Being Built	Com- pleted	Occupied by Eligible Families
		Need	No Need		During Year	To Date				
a	b	c	d	e	f	g	h	i	j	k

Column a: Self-explanatory.

Column b: To be obtained from installation records. Entry must be accounted for in Columns c, d and e; that is, entry in Column b must be sum of entries in Columns c, d and e.

Column c-g: To be obtained from installation records.

Column h & i: To be obtained from FHA field office.

Column j & k: To be obtained from management report.

4165.39 (Incl 5)  
Sept 22, 64

JUSTIFICATION FOR RETENTION OF SUBSTANDARD HOUSING

1. NAME AND LOCATION OF INSTALLATION:
2. DESCRIPTION OF FAMILY HOUSING UNITS PROPOSED FOR RETENTION:
3. AVERAGE MONTHLY OPERATION AND MAINTENANCE COSTS:
4. MONTHLY INCOME:

<u>NO. OF UNITS</u>	<u>TYPE</u>	<u>BAQ FORFEITURE OR RENTAL CHARGES</u>	<u>UTILITIES CHARGES</u>	<u>AVERAGE OCCUPANCY</u>
	1 BR			
	2 BR			
	3 BR			
	4 BR			

5. 

<u>REQUIREMENTS DATA</u>	<u>OFFICER</u>	<u>SENIOR ENLISTED</u>	<u>JUNIOR ENLISTED</u>
REQUIREMENTS			
ON-POST ASSETS			
COMMUNITY ASSETS			
DEFICIT			

6. GENERAL HOUSING CONDITIONS IN COMMUNITY:

7. DURATION OF NEED:
8. GRADES OF INTENDED OCCUPANTS:

4165.39 (Incl 5)  
Sept 22, 64

9. APPLICATION OF CRITERIA:

- a. The above described substandard housing is safe, decent and sanitary so as to be suitable for occupancy.
- b. The above described substandard housing cannot be made adequate as public quarters with a reasonable expenditure of funds.
- c. The rentals charged to, or the allowances forfeited by, the occupants of the above described substandard housing are not less than the cost of maintaining and operating the housing.
- d. There is a continuing need for the above described substandard housing which cannot appropriately be met by privately owned housing in the area.

Signed \_\_\_\_\_

4165.45 Jun 9, 65#  
(Att 1 to Encl 4)

Summary of Available Vacant Rental Housing

1. Name of Installation: _____ (Code: _____)		2. Date: _____		
3. Source: _____		a	b	c
4. Total number of units (unduplicated) listed		_____		
5. Total number of units with 1 or 2 bedrooms .....		_____		
a. Suitable for O-10 through O-6		_____	x	_____ = _____
b. Suitable for O-5 and O-4		_____	x	_____ = _____
c. Suitable for O-3--O-1 and W-4--W-1		_____	x	_____ = _____
d. Suitable for Enlisted		_____	x	_____ = _____
e. Unsuitable for any grade		_____	x	_____ = _____
6. Total number of units with 3 bedrooms .....		_____		
a. Suitable for O-10 through O-6		_____	x	_____ = _____
b. Suitable for O-5 and O-4		_____	x	_____ = _____
c. Suitable for O-3--O-1 and W-4--W-1		_____	x	_____ = _____
d. Suitable for Enlisted		_____	x	_____ = _____
e. Unsuitable for any grade		_____	x	_____ = _____
7. Total number of units with 4 or more bedrooms .....		_____		
a. Suitable for O-10 through O-6		_____	x	_____ = _____
b. Suitable for O-5 and O-4		_____	x	_____ = _____
c. Suitable for O-3--O-1 and W-4--W-1		_____	x	_____ = _____
d. Suitable for Enlisted		_____	x	_____ = _____
e. Unsuitable for any grade		_____	x	_____ = _____
8. Total number of units of all types (same as 4 above) .....		_____		
a. Suitable for an eligible grade		_____	x	_____ = _____
b. Unsuitable for any grade		_____	x	_____ = _____
9. Name(s) of Inspector(s): _____				
10. Prepared by: _____		11. Date: _____		

To fill out this summary, enter the name and code of the installation, the "as of" date of the survey and the source by title as set forth above. On each line designated by a letter, enter the number of units inspected in Column a and the blow-up factor in Column b; then multiply and enter the result in Column c. Separate factors will be computed for Sections 5, 6, and 7 by dividing the total number of units listed (Line 5, 6 or 7, Column c) by the total number of units inspected in each group (sum of all entries in Column a in Section 5, 6 or 7 as applicable). In each section, the entry on the numbered line should be the sum of the remaining entries in Column c. Then enter name(s) of inspector(s), name of person preparing the summary, and date of preparation.

The lists used in this inspection and the summaries of inspection results must be kept on file with other survey records for at least two years.

#First amendment (Ch 1, 8/1/66)

F O R M A T   B

Installation

FY\_\_ FISH AND WILDLIFE REPORT

1. State, installation and category

\_\_\_\_\_

2. Date cooperative plan (was) (will be) completed

\_\_\_\_\_

3. Extent of land and water areas in the Fish & Wildlife program

Land acreage

\_\_\_\_\_

Water acreage

\_\_\_\_\_

Miles of stream

\_\_\_\_\_

Miles of shoreline

\_\_\_\_\_

4. Degree of Public Access: Use the following legend and place the appropriate letters in the blanks for hunting, fishing and other:

- A. Generally open with controlled public access within manageable quotas.  
B. Installation personnel and guests.  
C. Installation personnel only.  
D. Closed (Specify whether for hunting, fishing, or other)

For hunting

\_\_\_\_\_

For fishing

\_\_\_\_\_

For other outdoor recreation

(includes other outdoor recreation, i.e., camping, picnicking, winter sports, etc., not swimming pools, ball parks, golf courses, etc.)

5. Estimated number of visitors granted access for:

Hunting

\_\_\_\_\_

Fishing

\_\_\_\_\_

Other Outdoor Recreation

\_\_\_\_\_

TOTAL

\_\_\_\_\_

6. Brief summary of natural beautification projects.

7. Explanation if public access is denied for hunting, fishing or other outdoor recreation.

F O R M A T C

FY\_\_ FISH AND WILDLIFE SUMMARY REPORT

from

DEPARTMENT OF \_\_\_\_\_

1. Number of Cooperative Management Plans completed \_\_\_\_\_
2. Number of Cooperative Management Plans pending \_\_\_\_\_
3. Number of installations in categories
 

I.	_____
II.	_____
III.	_____
IV.	_____
4. Degree of public access: (Use the legend from Item 4, Format B, to determine those installations in Class A, B, C, or D.)
 

	<u>Hunting</u>	<u>Fishing</u>	<u>Other Outdoor Recreation</u>
Number Installations in Class A:	_____	_____	_____
Number Installations in Class B:	_____	_____	_____
Number Installations in Class C:	_____	_____	_____
Number Installations in Class D:	_____	_____	_____
5. Number estimated total visitors granted access in FY\_\_ for: \_\_\_\_\_
6. Estimated total number of visitors granted access for hunting, fishing, and other outdoor recreation in FY \_\_\_\_: \_\_\_\_\_

4170.7 (Encl 1)  
Jun 21, 65

SUGGESTED FORMAT A  
FOREST RESOURCE MANAGEMENT REPORT FY\_\_\_\_  
INSTALLATION OR FACILITY \_\_\_\_\_  
(Name)  
\_\_\_\_\_  
(Location)

1. Total acres of Managed Woodland: \_\_\_\_\_
2. Professional Forester Time Used: \_\_\_\_\_ (man months)
3. Long Range Forest Management Plan: (a) Date Prepared: \_\_\_\_\_.  
(b) Date last revised: \_\_\_\_\_. (c) Date scheduled for next revision:  
\_\_\_\_\_. (d) Has annual work plan or increment been prepared for  
next fiscal year: (Yes) (No).
4. Timber Harvests: (a) Acres harvested: \_\_\_\_\_. (b) Sawtimber: \_\_\_\_\_ bd.  
ft. (c) Pulpwood: \_\_\_\_\_ cords. (d) Poles & Piling \_\_\_\_\_ bd. ft. (e)  
Other: \_\_\_\_\_. (f) Gross Proceeds: \$\_\_\_\_\_.
5. Timber Stand Improvement: (a) \_\_\_\_\_ Acres. (b) Gross Expenditures:  
\_\_\_\_\_.
6. Reforestation: (a) By tree planting: \_\_\_\_\_ Acres. By Direct Seeding:  
\_\_\_\_\_ Acres. (b) Windbreaks & Shelterbelts: \_\_\_\_\_ Acres. (c) Gross  
Expenditures: \$\_\_\_\_\_.
7. Fire Protection: (a) Acres Protected: \_\_\_\_\_. (b) Forest Fire Lanes:  
Miles constructed: \_\_\_\_\_, Miles maintained: \_\_\_\_\_, (c) Acres  
Control burned: \_\_\_\_\_. (d) Gross expenditures: \$\_\_\_\_\_.
8. Flood and erosion control to protect timber areas: (a) No. of structures:  
\_\_\_\_\_. (b) No. acres of soil treatment or planting: \_\_\_\_\_.  
(c) Gross expenditures: \$\_\_\_\_\_.
9. Timber Access Roads: (a) Miles constructed: \_\_\_\_\_. (b) Miles  
Maintained: \_\_\_\_\_. (c) Gross expenditures: \$\_\_\_\_\_.
10. Number \_\_\_\_\_ and Type \_\_\_\_\_ of Forestry operations contributing  
to natural beauty.
11. Administrative Management Costs: \$\_\_\_\_\_. (Includes all pro-  
gram costs not included in items 5 through 9 above.)
12. Total Program Expenditures: \$\_\_\_\_\_.
13. Estimated value of lumber products harvested & used on installation \$\_\_\_\_\_.

D 4 3 1 4 1

ANNUAL REPORT FY \_\_\_\_\_  
Department of the \_\_\_\_\_

Soil and Water (Land Management) Conservation Program

1. Soil and Water Conservation (Land Management) Plans

Installation	Plans Required		Plans Current		Grounds Classification (Current Plans)	
	No.	Acres	No.	Acres	Improved Acres	Semi-Improved Acres
TOTALS						

2. Landscape Development Plans and Soil Surveys

Installation	Landscape Plans		Soil Surveys	
	Required No.	Completed No.	Required No.	Completed No.
TOTALS				

3. Land Outleases and Resource Conservation Plans

Installation	Outleases		Plans Incorporated		Annual Returns (\$)	
	No.	Acres	No.	Acres	Cash Rental	Conservation Benefits
TOTALS						

4. Construction Projects requiring conservation measures

Installation	FY Construction Projects Requiring Conservation Measures		Special Conservation Projects	
	Projects No.	Cost of Measures	Project Backlog No.	FY Completions No.
TOTALS				

5. Herbicide Treatments

Installation	Kind of Herbicide		Strength of Concentrate		Application Rate of Concentrate		Name of Vegetation Eradication		Acres Treated	
	No.	Acres	No.	Acres	No.	Acres	No.	Acres	No.	Acres

Projects enhancing natural beauty will be indicated by an asterisk (\*)

4170.8 (Encl 1)  
June 21, 65



FORMAT B

ECONOMIC EVALUATION - DoD INVESTMENTS  
DETAIL OF BENEFITS

	<u>Present</u>	<u>Proposed</u>	<u>Annual Savings \$</u>
1. Personnel			
a. Civilian			
b. Military			
c. Other			
2. Operating (Itemize)			
a.			
b.			
c.			
d.			
e.			
3. Overhead Costs (Itemize)			
a.			
b.			
c.			
4.	Total Annual Savings		\$ _____
5.	Present Value Savings		\$ _____
6.	Present Value of Terminal Value		\$ _____
7.	Total Present Value of Benefits		\$ _____
8.	Economic Life: _____ Years		
9.	Discount Factors: _____		
	Table _____		

7041.3 (Encl 1)  
Dec 19, 66

FORMAT B (Cont'd)

ECONOMIC EVALUATION - DoD INVESTMENTS  
DETAIL OF BENEFITS (CONTINUED)

10. Explanation of Source/Derivation of Estimates

Name and Title of Principal Action Officer

Date

Page 2 of 2

B-131

## APPENDIX C

### ANALYTICAL METHODS

The goal in preparing this appendix was to devise useful decision tools. Users are expected to apply judgment when reviewing the results. Formulas and the computer should do the routine work and decision-makers make the adjustments to take care of the exceptions. The normal meaning of validity does not apply; what matters are the results in terms of insight gained and labor saved.

#### A. Investment Costs To Provide Facilities

A memorandum accounting system is suggested with the purpose of being able eventually to compute total costs of providing facilities to Army users. The problem here is finding a way of charging off investments against Army programs on a yearly basis. If the system is successful, the effects of deferring maintenance or spending money on upgrading repairs can then be related to changes in the Army's investment in facilities. In addition, an up-to-date estimate of the value of Army-owned facilities (land valuation is specifically excluded from this discussion) will be obtained. Since time-related factors are included, future conditions can be projected by applying suitable estimates of the time-dependent factors. A memorandum accounting system is suggested because of its unofficial standing and because of the heavy content of statistical methods. While the basic input data are quite similar to those currently used, the approach has features that make it an independent estimation method. As such, its results can be used to cross-check results from official systems.

##### 1. Definitions

##### a. Value

In this discussion, value refers strictly to value to the Army, not historical value, market value, or potential sale price. It is given a special meaning intended for the context of its use. Computational convenience is given priority over subtlety of concept. The value of a

structure is defined as its reproduction cost minus the cost of bringing it up to Condition 1 (i.e., the IFS term " $\Delta S$ "<sup>1</sup>), with an allowance for obsolescence. Initial value,  $W_0$ , is equal to the initial cost of acquisition measured in dollars as of the date of acquisition. Current value is in terms of dollars as of the year intended in the calculation. Value at the start of any year is regarded as a prepaid operating expense to be realized in subsequent years according to an agreed schedule. Conversions, deterioration, modifications, and rehabilitations are causes for revising the value.

b. Depreciation

Depreciation is likewise given a special meaning. It is applied to all time-dependent effects on a facility, except deterioration, which diminish its suitability for its designated mission and affect ease of maintenance (e.g., its layout may not suit current needs, repair parts may be difficult to obtain, its design or other features may cause current maintenance methods to be inefficient). The depreciation schedule determines the rate at which value is converted to expense. This component of expense may then be added to other components to compute the total cost of providing facilities. It is realized that some philosophical difficulties may arise in cases where the condition of the structure (and hence its value) is changed either upward or downward in a given period. Rather than become entangled with complex methods of compensation, a simplifying rule is proposed: break the period in which the change occurs into two equal parts and assume the change occurs as a step function at the period's mid-point. The depreciation schedule is then applied to these two segments using the appropriate value in each time segment.

There are several possible depreciation schedules. Reference 1 contains a brief but useful discussion of value and depreciation. (See also refs. 2, 3, and 4.) Each schedule involves the selection of a service life (SL) and some rule of calculation, such as straight line, sum-of-the-years'-digits, constant percentage, double declining balance, or sinking

---

<sup>1</sup>See PRC R-1209, Facility Condition Field Test and Impact Analysis for the Integrated Facilities System, Volume VI, Part 2, September 1969.

fund system, dealing with relative rates of conversion at different times in the structure life. Ref. 2 uses the "constant percentage" approach, which appears realistic when dealing with structures. It allows some positive value to be assigned to a building in good condition even though its nominal service life has expired. In addition, the formulation is quite simple and probably adequate for the purposes. The basic formulas are:

$$W_{i+1} = W_i (1 - 1/SL) = W_0 (1 - 1/SL)^{(year\ i+1 - year\ 0)}$$

$$\text{and } D_i = W_i / SL,$$

where  $W_0$  = value at start of year 0

$W_i$  = value at the start of year i

$W_{i+1}$  = value at the start of year i+1

SL = service life in years

$D_i$  = depreciation during year i.

Year 0 is the year of construction; however, it can be any other year as long as the associated value,  $W_0$ , is for the same year.

Reference 3 contains depreciation times for general types of facilities and these could be used as the SL's in the preceding equations. (See Exhibit C-1 for an excerpt from ref. 3.) Since the selection of SL's is a primary method for expressing policy, the Army may wish to choose its own values in keeping with the intended application. Since deterioration is treated separately, longer SL's than those from reference 3 might be appropriate.

#### c. Construction Cost Indices

Construction cost indices (CCI) are compiled periodically by several authorities. Some are general in nature and others are specialized for particular types of facilities. Some base period (usually 1 or 3 years) is assigned a value of 100 (%) and used as a reference for

4100.33 (Encl 5)  
Jul 22, 66

<u>ASSET</u>	<u>DEPRECIATION TIME (Years)</u>
I. <u>GENERAL</u>	
1. Furniture, Fixtures, Machines and Equipment	10
2. Transportation Equipment	
(a) Aircraft	6
(b) Automobiles	3
(c) Buses	9
(d) Trucks	
Light (under 13,000 lbs)	4
Heavy (over 13,000 lbs)	6
(e) Railroad cars	15
(f) Tractor units	4
(g) Trailers	6
(h) Vessels	18
3. Land Improvements	20
4. Buildings	
(a) Apartments, hotels, theatres	40
(b) Dwellings, factories, garages, machine shops, office buildings	45
(c) Banks, loft buildings, stores	50
(d) Grain elevators, warehouses	60
(e) Telecommunications switching equipment	30

EXHIBIT C-1 DEPRECIATION GUIDELINES

IV. TRANSPORTATION, COMMUNICATIONS AND PUBLIC UTILITIES

1. Air transport	6
2. Central steam production and distribution	28
3. Electric utilities, includes the related land improvements	
(a) Hydraulic	50
(b) Nuclear	20
(c) Steam	28
(d) Transmission and distribution facilities	30
4. Gas utilities, includes the production, transmission, and distribution of natural and manufactured gas for sale, and related land improvements	
(a) Distribution facilities	35
(b) Manufactured gas production plant	30
(c) Natural gas production plant	14
(d) Trunk pipelines and related storage facilities	22
5. Motor transport	
(a) Freight	8
(b) Passengers	8
6. Pipeline transportation	22
7. Radio and television broadcasting	6
8. Railroads	
(a) Machinery and equipment	14
(b) Structures and similar improvement	30
(c) Wharves and docks	20
(d) Power plant and equipment (electric generating)	
1. Hydraulic	50
2. Nuclear	20
3. Steam	28
9. Water transportation	20
10. Water utilities	50
11. Radio communications	8
12. Telephone communication systems	
(a) Station apparatus including station connections	12
(b) Transmission and distribution media	30
(c) Pole lines	25
(d) Mobile telephone systems	8
(e) Test equipment and generators	12
(f) PBX switching equipment	15

EXHIBIT C-1 (Continued)

costs in other years. (See Exhibit C-2 and C-3 and refs. 5 to 11 for examples.) The intended use in this context is to convert costs in one year to costs in another by means of a ratio of the indices. Suppose the base year is the year of original construction (subscript 0) and the other year is year Y. Let  $W_0$  be the initial cost. Then replacement cost (RC) will be computed as:

$$W_0 \times (CCI_Y / CCI_0) \quad (3)$$

It should be noted that reproduction cost is not the same as value in year Y. Deterioration and interim depreciation must also be brought in. Secondly, a CCI can be assumed for any year in which it is not available, of course recognizing the associated uncertainties. In particular CCI's for the years covered by the current FYDP could be assumed so that projections could be made.

#### d. Deterioration

It is part of the IFS design that each facility will be inspected by a certified team that will estimate the cost to restore the facility to Condition 1. (Condition 1 means fully able to support its designed mission.) This cost is called " $\Delta$ " and is a measure of deterioration in terms of current costs and repair methods.

### 2. Discussion

The computational approach is based on determining a replacement cost of each structure and the application of factors, indices, and the results of a condition inspection to develop "values" in other years. One source of cost information could be that used to meet the requirements for the reports specified in DOD Instruction 7500.1. This instruction calls for annual cost reports of government-owned facilities. Alternative and usually preferable methods of estimating value will be discussed shortly. However, at least one tool is now available for computing values and depreciation for any given year. Using equations 1, 2, and 3, we get:



# EXHIBIT C-2 SAMPLE BUILDING COST INDEX SERIES

Series	Base Dates (=100)	Authority	Source
1	1913	Riggleman	Reference 10
2	1947-49	Dept. of Commerce Composite	Reference 10
2a	1957-59	Dept. of Commerce Composite	Reference 5 through 11

Series				Series			
Date	1	2	2a	Date	1	2	2a
1968			131	1943		65	
1967			127	1942		61	
1966			121	1941		54	
1965			116	1940		50	
1964			112	1939		49	
1963				1938		52	
1962		148	107	1937		51	
1961		145	104	1936		48	
1960		144	103	1935		47	
1959		141	102	1934		48	
1958		138	100	1933	170.0	43	
1957		137	99	1932	157.0	40	
1956		132	95	1931	181.4	46	
1955		125	90	1930	202.9	50	
1954		122	88	1929	207.0	52	
1953		122	88	1928	206.8	51	
1952		119	86	1927	206.2	51	
1951		116	84	1926	208.0	51	
1950		107	77	1925	206.7	51	
1949		103	69	1924	215.4	52	
1948		104	72	1923	214.0	52	
1947		93	68	1922	174.5	47	
1946		77	56	1921	201.8	52	
1945		67		1920	251.3	64	
1944		64		1919	212.8	52	

<u>Series</u>				<u>Series</u>			
Date	1	2	2a	Date	1	2	2a
1918	170.9		46	1892	70.9		
1917	142.9		39	1891	70.9		
1916	115.6		31	1890	73.3		
1915	100.9		28	1889	75.3		
1914	98.3			1888	75.2		
1913	100.0			1887	77.8		
1912	90.7			1886	78.1		
1911	93.4			1885	73.1		
1910	96.3			1884	73.3		
1909	90.0			1883	81.9		
1908	97.2			1882	81.5		
1907	100.6			1881	77.6		
1906	95.1			1880	73.2		
1905	90.6			1879	67.3		
1904	87.4			1878	69.7		
1903	84.0			1877	73.6		
1902	83.8			1876	79.0		
1901	83.6			1875	82.0		
1900	79.9			1874	90.2		
1899	74.4			1873	97.0		
1898	67.5			1872	99.2		
1897	66.5			1871	99.4		
1896	68.3			1870	95.3		
1895	69.8			1869	105.4		
1894	69.2			1868	104.3		
1893	71.1						

## Construction and Housing

### No. 1068. PRICE AND COST INDEXES FOR CONSTRUCTION AND SELECTED COMPONENTS OF CONSTRUCTION: 1946 TO 1968

(1967-89=100, except as indicated. Excludes Alaska and Hawaii except as noted. Indexes of certain of these firms are published on bases different from those shown here. See *Historical Statistics, Colonial Times to 1957*, series N 85-102, for construction cost indexes on a 1947-49 base)

ITEM	1946	1950	1955	1960	1965	1968
Price index for new one family houses sold (1963=100) <sup>a</sup>	(NA)	(NA)	(NA)	(NA)	103.5	117.0
Dept. of Agriculture, Economic Research Service	(NA)	(NA)	(NA)	(NA)	105	126
Farm housing.....	(NA)	(NA)	(NA)	(NA)	106	120
Other farm construction.....	(NA)	(NA)	(NA)	(NA)	106	120
Indexes of building materials prices and union wage scales						
Wholesale prices of construction materials <sup>1</sup> .....	52.2	83.0	85.1	100.5	100.9	111.1
Union hourly wage scales in the building trades <sup>2</sup> .....	49.5	68.0	86.8	109.0	131.4	154.1
Construction cost indexes:						
Department of Commerce Composite <sup>3</sup>	50	77	90	103	116	131
Department of Transportation, Federal Highway Administration, Highways <sup>4</sup> .....	70.7	78.3	87.3	94.1	105.9	121.6
American Appraisal Company Building construction <sup>5</sup> .....	47	73	80	106	121	142
Associated General Contractors of America: General construction <sup>6</sup> .....	52	72	88	107	123	136
E. H. Hoeckh and Associates <sup>7</sup>						
Small residential structures Composite.....	57.4	80.3	92.4	104.2	115.2	136.7
Apartments, hotels, and office buildings Composite.....	54.0	75.8	90.4	105.0	118.5	139.9
Commercial and factory buildings Composite.....	53.0	74.0	89.5	104.7	117.2	139.1
Engineering News-Record: <sup>8</sup>						
Building construction.....	49.8	71.2	89.0	106.1	118.9	136.8
General construction.....	45.5	67.1	86.8	106.3	127.8	151.9
George A. Fuller Company, Commercial buildings <sup>9</sup> .....	55	72	88	106	124	136
Turner Construction Company, Building construction <sup>10</sup> .....	55	73	85	102	113	128
Handy-Whitman public utility construction: <sup>11</sup>						
Building.....	45	67	83	104	111	125
Gas plant.....	45	65	83	106	117	129
Electric light and power <sup>12</sup> .....	46	66	84	102	107	118

NA. Not available. <sup>1</sup> Includes value of site.

<sup>2</sup> Covers materials incorporated as integral part of a building or normally installed during construction and not readily removable. Excludes consumer durables, such as kitchen ranges, refrigerators, etc. Beginning 1965, applies to Alaska and Hawaii. Source: Dept. of Labor, Bureau of Labor Statistics, unpublished data.

<sup>3</sup> Based on minimum wage rates agreed upon through collective bargaining; excludes overtime. As of July 1. Source: Dept. of Labor, Bureau of Labor Statistics. (Bulletin No. 1691, *Union Wages and Hours: Building Trades*, 1968.)

<sup>4</sup> Covers both building and nonbuilding construction, excluding maintenance and repair. Represents a weighted average of various indexes used for different types of construction.

<sup>5</sup> Based on average contract unit bid prices for composite mile (involving specific average amounts of excavation, paving, reinforcing steel, structural steel, and structural concrete).

<sup>6</sup> Average for 30 cities of 4 types of buildings: Wood-frame, brick-wood frame, brick-steel frame, and reinforced concrete. Covers materials and labor costs in structural portion of buildings but excludes those for plumbing, heating, lighting, sprinklers, and elevators. Reflects employee-benefit costs, and allows for contractors' overhead and profit.

<sup>7</sup> Covers building and nonbuilding construction. Wages and materials for 12 cities combined in 40-60 ratio. Wages are for hod carriers and common laborers only. Materials weighted: Sand, gravel, crushed stone, cement, common brick, lumber, hollow tile, and structural and reinforcing steel. Excludes taxes and employee-benefit costs.

<sup>8</sup> Average of 30 cities for types shown. Weights based on surveys of building costs. Wage rates used for both common and skilled labor. Reflects payment of sales taxes and social security payroll taxes. Unweighted averages from Hoeckh series prepared by Bureau of the Census.

<sup>9</sup> Building construction index computed on basis of hypothetical unit of construction requiring 5 bbl. of portland cement, 1 028 M bd. ft. of 2" x 4" lumber, 2,500 lb. of structural steel, and 68.38 hours of skilled labor. General construction index based on same materials components combined with 200 hours of common labor.

<sup>10</sup> Composite of 36 major cost elements in 3 commercial-type buildings including structural elements and elevators, wiring, plumbing, heating, and ventilating. Covers skilled and unskilled labor and reflects employee-benefit costs.

<sup>11</sup> Eastern cities. Based on firm's cost experience with respect to labor rates, materials prices, competitive conditions, efficiency of plant and management, and productivity. Reflects payment of sales taxes and employee-benefit costs.

<sup>12</sup> Based on data covering public utility construction costs for 85 items in 6 geographic regions. Covers skilled and common labor; does not reflect tax payments and employee-benefit cost.

<sup>13</sup> As derived by Bureau of the Census; covers steam production plants only, includes hydraulic plants.

Source: Dept. of Commerce, Bureau of the Census, except as noted. In Dept. of Commerce, Business and Defense Services Administration; *Construction Review*.

## EXHIBIT C-3 PRICE AND CONSTRUCTION COST INDEXES

$$\begin{aligned}
 W_Y &= (RC - \Delta\$) \times (1-1/SL)^{(Y - \text{Base Year})} \\
 &= (W_0 (CCI_Y/CCI_0) - \Delta\$) (1-1/SL)^{(Y - \text{Year 0})}
 \end{aligned}
 \tag{4}$$

As an example, suppose the subject is a permanent construction administration building. From Exhibit C-1, the depreciation time for office buildings is 45 years, which will be used as the SL. Suppose the building was constructed in 1948 (i.e., year 0) for \$100,000 (i.e.,  $W_0$ ) and the value in 1968 is desired (i.e.,  $W_Y$ ). Assume that it needs \$30,000 of work (i.e.,  $\Delta\$$ ) to raise it to Condition 1. Assume also that the Department of Commerce CCI series has been selected for this type of structure. The 1968 CCI is 131 and the 1948 CCI is 72 (from Exhibit C-2).

The reproduction cost in 1968 becomes

$$RC = \$100,000 \times 131/72 = \$182,000 \tag{5}$$

Inserting the other values in equation 4, we get

$$\begin{aligned}
 W_{1968} &= (RC - \Delta\$) \times (1-1/SL)^{(Y - \text{Base Year})} \\
 &= (182,000 - \$30,000) (1-1/45)^{(1968-1948)} \\
 &= \$152,000 \times (0.978)^{20} = \$97,300
 \end{aligned}
 \tag{6}$$

The decrease in value during 1968, assuming that the repairs were not made, would be

$$\begin{aligned}
 \text{Value decrease} &= \text{charge to operations} \\
 &= \$97,300 \times (1/45) = \$2160
 \end{aligned}
 \tag{7}$$

The value at the start of 1969 would be (assuming  $CCI_{1969} = 140$ )

$$\begin{aligned}
 W_{1969} &= W_{1968} (1-1/SL)^{(1969-1968)} \times (CCI_{1969}/CCI_{1968}) \\
 &= 95,140 \times 140/131 = \$101,600
 \end{aligned}
 \tag{8}$$

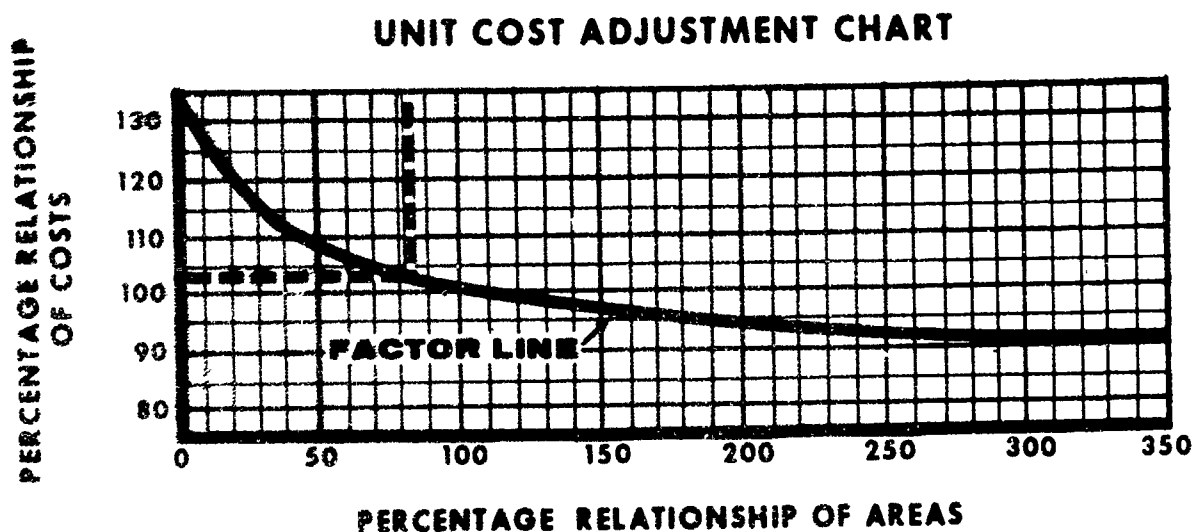
Now suppose the original cost is unavailable or for some reason considered undependable. A substitute must be found either for reproduction cost or directly for value.

An appraisal in some prior year could be used as a substitute for  $W_{Y_0}$ , which is the equivalent of  $W_{1968}$  in equation 8, except that it refers to the year of the appraisal. Then depreciation and the construction cost index ratio would be applied to do the updating.

The next group of possibilities involves experience with comparable buildings. The best of these would use actual costs in a recent year in an area with similar building costs. Bids and appraisals could be used, but may be less dependable. Ref. 12 (AR 415-17) contains a graph and two tables that greatly expand the opportunities for the comparable cost approach. (See Exhibits C-4, C-5 and C-6, which are excerpts from Ref. 12.) Exhibit C-4 allows a unit cost (e.g., \$/sq. ft.) adjustment if the comparable improvement differs in size from the "standard". Exhibit C-5 is a table of "Area Cost Adjustment Factor," which allows translation of costs in one region of the U.S. or the world to another. Exhibit C-6, a table of representative costs and standard structure descriptions, could even be used to start the value computation if no better basis is available.

Since several different approaches exist for computing the value of an improvement, it may be prudent to attach a code (e.g., a pair of digits or letters) to identify the method used. Secondly, the various factors and tables could be adjusted annually by selecting key types of structure, computing their values by the different methods and attempting an adjustment in favor of the more dependable methods. The outcome of this process would be a new set of factors and estimates of their accuracy. Cost estimates for new construction could then be developed by the computer and used to test the reasonableness of proposals and bids. The amount of special data collected is minimal since most would either come from the IFS data base or be collected in the normal course of business. The rest of the work would be done by the computer, given some simple programs and the tables mentioned earlier.

The effect of major maintenance, repair, and conversion would be to change the value of an investment. Likewise, maintenance deferral would cause an increase in  $\Delta$ \$, and hence a decrease in the value of the investment. "Visibility" of the effect of such actions, as well as of the effects of depreciation and building cost changes would be obtained. All these factors can be expressed in terms of dollars in any desired year by providing the appropriate time-dependent factors.



This chart is for use in developing the estimated cost of a similar type building when the gross floor area varies from those shown herein.

*Example* To determine the square foot unit cost of an administration building with a gross area of 12,750 SF.

1. Divide the area of 12,750 SF by 15,000 SF (the area shown herein for an administration building) to determine the percentage relationship of areas,

which is 85 percent.

2. From the percentage relationship of 85 percent follow the dotted line to where it intersects the factor line, then left to the percentage relationship of costs, which is 103 percent.

3. The adjusted unit cost for the 12,750 SF building is obtained by multiplying the empirical unit price of \$25.40 by 1.03 to determine the adjusted unit price of \$26.16. This should be rounded to \$26.25.

EXHIBIT C-4 UNIT COST ADJUSTMENT CHART

State	Exceptions	Factor	State	Exceptions	Factor
Virginia		.95	Washington		1.05
	Ft. Eustis, Ft. Lee, Yorktown, and	1.00		Puget Sound Area	1.15
	Area Adjacent to DC.		West Virginia		1.00
	Langley AFB, Vint Hill Farms, Dahlgren, Dismal Swamp Area and Quantico.	1.05		Sugar Grove	1.05
			Wisconsin		1.10
			Wyoming		1.05

## PART II. UNITED STATES OTHER THAN CONTINENTAL

Area	Factor	Area	Factor
Alaska:		Fort Wainwright (Ladd)	1.9
Aleutian Islands:		Whittier	1.9
Adak	3.0	Canal Zone	1.3
Attu	3.0	Hawaii:	
Dutch Harbor	2.5	Oahu	
Shemya	3.1	Honolulu Area	1.3
Other Areas	3.0	Other Areas	1.4
Anchorage	1.7	Kauai:	
Barter Island, North Coastal Area	3.6	Coastal Areas	1.6
Clear AFS	2.2	Mountainous Areas, Barking Sands	1.8
Coastal Area, North of Aleutians	3.5	Other Islands	1.6
Cold Bay	3.0	Johnston Islands	2.0
Eielson AFB	1.9	Line Islands: Palmyra	2.0
Elmendorf AFB	1.7	Mariana Islands:	
Fairbanks	1.9	Guam	1.8
Fort Greely (Big Delta)	2.2	Saipan and Tinian	2.0
Fort Richardson	1.7	Marshall Islands:	
Inland Area, North of Aleutians	4.0	Bikini, Eniwetok, Kwajalein, and Majuro	2.4
Juneau	1.8	Meck	2.8
Kenai Peninsula	2.1	Midway Island	2.2
Kodiak	2.5	Puerto Rico:	
Kotzebue	2.4	San Juan Area	1.4
Naknek	2.1	Roosevelt Roads Area	1.5
Nome	2.3	Samoa	2.2
Northway, Highway Area	2.3	Virgin Islands	1.3
Point Barrow	3.5	Wake Island	2.2
Remote Interior Areas: Fort Yukon	2.6		

PART III. FOREIGN COUNTRIES  
(Applicable to Normal Construction Procedure Only)

Area	Factor	Area	Factor
Admiralty Islands	2.2	Barbades and Trinidad	1.2
Afghanistan	1.5	Burma	1.4
Algeria	1.3	Canada:	
Argentina	1.9	Newfoundland:	
Ascension Island	2.5	Argentina	1.8
Australia:		Goose AFB and Harmon AFB	1.3
South Coastal Areas	1.1	Inland Areas	2.2
North Coastal Areas	2.3	Labrador	1.4
Azores	1.1	North Inland Areas (Dew Line)	3.5
Bahama Islands	1.5	South Inland Areas	1.6
Belgium	1.0	Caroline Islands: Truk	2.0
Bermuda	1.6	Ceylon	1.1
Bolivia	1.7	Chile	1.5
Brazil	1.5	Christmas Island	2.2
British Guiana	1.2	Colombia	1.3
British Honduras	1.0	Costa Rica	1.0
British West Indies:		Cuba: Guantanamo Bay	1.6
Antigua	1.4	Denmark	1.3

Table 1. Area Price Adjustment Factors

## PART I. CONTINENTAL UNITED STATES

State	Exceptions	Factor	State	Exceptions	Factor
Alabama		0.90		Martha's Vineyard	1.30
	Gulf Coast Area	.95		Nantucket	1.65
Arizona		1.05	Michigan		1.15
	Fort Huachuca	1.20		Northern Area	1.20
	Luke AFB, Phoenix,		Minnesota		1.10
	Tucson, Yuma	1.10		Northern Area	1.15
	Gila Bend AFS	1.15	Mississippi		.90
Arkansas		1.00		Gulf Coast Area, Meridian	.95
	Little Rock	1.05	Missouri		1.10
California		1.10		Fort Leonard Wood	1.30
	San Francisco Bay Area,		Montana		1.10
	Desert Areas	1.20		Malmstrom AFB	1.15
	Sierra Army Depot		Nebraska		1.05
	and Two Rock Ranch		Nevada		1.15
	Station		New Hampshire		1.05
	San Clemente, San		New Jersey		1.15
	Nicolas	1.70		Newark Area	1.20
	Islands and Santa Cruz		New Mexico		1.05
	Island.		New York		1.15
Colorado		1.05		New York City and Long	
Connecticut		1.10		Island	1.30
	New London	1.15		West Point	1.35
Delaware		1.05	North Carolina		.95
	Dover	1.10		Cherry Point, Camp Le-	
District of Columbia		1.00		jeune	1.00
Florida		.95	North Dakota		1.10
	Cape Kennedy and Key			Grand Forks	1.25
	West	1.15		Minot	1.25
	Orlando	1.00	Ohio		1.10
Georgia		.95		Clinton County AFB	1.20
Idaho		1.10		Wright-Patterson AFB	1.20
	Mountain Home AFB	1.20	Oklahoma		1.00
Illinois		1.15	Oregon		1.05
	Scott AFB and Granite			Condon AFS	1.15
	City	1.20	Pennsylvania		1.05
Indiana		1.05		Philadelphia	1.10
	Grissom AFB	1.10	Rhode Island		1.15
Iowa		1.00	South Carolina		.95
Kansas		1.05		Charleston, Fort Jackson,	
Kentucky		1.00		and Shaw AFB	1.00
	Fort Knox	1.05	South Dakota		1.10
Louisiana		.95		Ellsworth AFB	1.15
	Lake Charles Area	1.05	Tennessee		.95
Maine		1.10	Texas		.95
	Far Northern Area	1.25		Matagorda Island	1.05
Maryland		1.00	Utah		1.00
	Bainbridge and			Hill AFB	1.05
	Cheltenham	1.05		Dugway Proving	
	Fort Ritchie	1.10		Grounds	1.20
	Indian Head	1.10	Vermont		1.05
	Patuxent River ATC	1.10			
Massachusetts		1.10			
	Fort Devens	1.15			

EXHIBIT C-5 (Continued)



Table 2. Empirical Cost Estimates—Military Construction

Category code	Items	Drawing No.	Quantity and unit	Unit price	Total estimated cost	Remarks
171-20	Academic Building		25,000 SF	\$ 24.10	\$ 603,000	
610-90	Administration Building					
	(3 stories or less)		15,000 SF	25.40	381,000	
	Data Processing Portion			33.10		
	(Without Shielding)					
610	Administration and Storage Bldg & Company.	30-14-08	12,500 SF	22.00	275,000	
722	Barracks		Man	2,900.00		Congressional limitation.
724	Bachelor Officer Quarters		Man	10,000.00		Congressional limitation.
740-11	Bank		1,900 SF	26.10	50,000	
740-13	Bath House	31-10-26	3,700 SF	29.50	109,000	
	do	27	5,832 SF	28.50	166,000	
	do	28	7,172 SF	27.00	194,000	
740-12	Bowling Alley:					
	Building		7,200 SF	20.50	148,000	8 lanes
	Lanes including automatic equipment per lane.			14,000.00		8 lanes
740-18	Chapel:					
	300 Seats (Unit)	38-01-13	8,100 SF	36.20	293,000	
740-16	300 Seats (Post)	38-01-58	8,100 SF	36.20	293,000	
	600 Seats (Pos.)	38-01-59	12,000 SF	35.00	420,000	
740-17	Chapel Center:					
	Religious Education Facility.	38-01-60	2,620 SF	28.75	75,000	
	do	61	3,855 SF	28.50	110,000	
	do	62	5,000 SF	28.00	140,000	
	do	63	6,100 SF	27.75	169,000	
	do	64	8,800 SF	27.25	240,000	
	do	65	13,100 SF	26.75	350,000	
	do	66	17,500 SF	26.00	455,000	
171-50	Classroom (btn)		3,500 SF	27.50	96,000	
740-68	Club—Service	SK 31-18-31	7,000 SF	29.25	205,000	
	do	32	12,700 SF	27.50	349,000	
	do	33	19,800 SF	26.50	525,000	
	do	29	27,800 SF	26.00	723,000	
740-21	Commissary—Store	SK 36-07-15	3,500 SF	24.50	86,000	
	do	16	6,950 SF	23.25	162,000	
	do	17	10,500 SF	22.25	234,000	
	do	18	14,000 SF	21.75	306,000	
	do	19	17,500 SF	21.00	368,000	
	do	20	20,950 SF	20.75	435,000	
	do	21	23,900 SF	20.50	490,000	
	do	22	28,000 SF	20.25	567,000	
	do		36,000 SF	20.00	720,000	
	do		49,000 SF	19.75	968,000	
133-10	Control Tower:					
	Masonry	66-06-08	2,800 SF	LS	172,000	7 stories—53'-4" to control room floor.
	Additional Intermediate Floors.			EA	13,000	8'-8" high
	Metal Siding		2,942 SF	LS	183,000	7 stories—53'-4" to control room floor.

EXHIBIT C-6 EMPIRICAL COST ESTIMATES  
IN MILITARY CONSTRUCTION

## B. Facility Readiness Calculation and Use

A method for computing and using a Facility Readiness Index is outlined in Ref. 13. Since that report, the method has been expanded slightly to include a companion facility efficiency index, and integration with other parts of the facility management process has been explored with good results.

Force claimants currently prepare readiness reports regarding personnel and equipment. The readiness condition (REDCON) of a claimant for each asset type depends on the percentage of its full strength authorization of personnel and equipment and their states of training or operability which it possesses at the time of the report. It is suggested that the list of assets be extended to cover facilities. All the basic structures specified in Ref. 14 (AR 220-1) carry over without change; the Army needs merely to select thresholds for the various facility categories. Exhibit C-7 is an example of how the categories might be defined.

Readiness as prescribed in AR 220-1 refers to the user side of the problem. It is also possible and useful to compute a corresponding supplier readiness ( $R_S$ ) index that has practically the same meaning as user of unit Readiness, i.e., the "fill rate" or fraction of what is authorized to the units assigned to an installation which is provided to the units.

$$R_S = \frac{\text{Provided}}{\text{Authorized}} \quad (9)$$

The only basic difference between user and supplier readiness calculation is the point of view. However, the supplier's problem is complex because several units with diverse requirements can be assigned to a single installation.

A companion index is also proposed which will be called Facility Supplier Efficiency Index or Supplier Efficiency,  $E_S$ . This is a measure of facility utilization efficiency and relates what is provided to what is available for use without undue delay (say 30 or 60 days).

$$E_S = \frac{\text{Provided}}{\text{Available}} \quad (10)$$

EXHIBIT C-7 INSTALLATION FACILITY READINESS CAPABILITY, (1)  
IN PERCENTAGE FILL OF AGGREGATED REQUIREMENTS

Assets Groups	Readiness Level			
	1	2	3	4
Barracks	90-100	80-89	70-79	0-69
Training Facilities	85-100	75-84	65-74	0-64
Maintenance Facilities	85-100	75-84	65-74	0-64
Other Support Facilities	85-100	75-84	65-74	0-64

Note: (1) Both the fill percentages and the list of facility types in this exhibit are for illustrative purposes only. The Army could readily establish by a regulation similar to AR 220-1 the facilities to be covered, the fill rate ranges for each readiness descriptor, and the rules for developing a composite installation report. Note that it is necessary to know both what facilities are authorized to units assigned to the installations and how much is provided to the units to make the readiness determination. Fill rates can be changed by changing either what is authorized or what is provided.

Combined consideration of the readiness and efficiency scores of a plan could produce the following general diagnoses:

- a. High readiness, high efficiency
  - Good plan
  - Facilities well matched to user requirements in kind, quantity and collocation
- b. High readiness, low efficiency
  - Good plan
  - Look for deactivation possibilities
- c. Low readiness, high efficiency
  - Facility shortages are evident
  - Reactivation and new construction are indicated
- d. Low readiness, low efficiency
  - Poor planning; users need facilities not available, and unneeded assets are available
  - Look for conversion possibilities

An installation facility readiness report should contain the following elements:

- Type and quantity of facilities authorized to the occupants
- Type and quantity of facilities provided to the occupants
- Type and quantity of facilities available, at least for the types needed by the occupants
- The resulting readiness and efficiency scores
- The average unit cost to provide the next increment of capability for those types which show a deficit

The first four items can also be computed by IFJ using the facility planning program, using assets and facility requirements data as inputs. Reports from the field will differ from these calculations somewhat because of local situation details not covered by IFS. After some experience is gained, however, the differences between the computer estimates and field reports should stabilize. Then the field reporting frequency could be reduced and reliance could be placed on adjusted computer estimates between reports.

Various totals, differences, and ratios can then be calculated for the different commands, regions, and even the whole Army. Surpluses and deficits for the same facility type may mean a shift of stationing assignments is desirable. Activation, construction, and deactivation possibilities can be brought out. The readiness and efficiency indices can be used to develop norms for the Army. It is important to note that the indices for a given installation depend in great measure on the requirements of the units assigned to them. Thus, these indices primarily measure the quality of a given plan rather than the performance of a post engineer or commander.

The cost data are important whenever the choice of how to spend money is still open. Such choices are main issues through the planning, programming, and budgeting (PPB) phases and frequently in the execution phase as well. The role of money and hence the character of the calculation change when moving through the PPB and execution phases. Initially, the proposed mission package is the dominant factor and the question is "How much would this package cost?" Then dominance shifts steadily until the question becomes "How much can be done with this much money?" It is necessary to know the cost of different facility capabilities, but once the adjustment process has started, interest shifts to differences in costs. For this reason, it is recommended that readiness reports include data on the cost of additional increments of capability. Where one installation may require new construction to reduce a facility deficit, another may merely require upgrading of existing facilities.

The implication so far has been that all this information would come from installation readiness reports. While this approach may be useful to develop some of the ideas, there is much to be gained by extending it. Readiness reports are valuable as a means of checking the validity of the plans and planning factors basic to their design; they provide a point of departure for executing the current program and are a rich source of data for developing plans and planning factors for the future. It then becomes a small step to use readiness estimates as a tool in refining future plans. These estimates can be developed by a computer

without necessarily involving field personnel. Hypothetical plans, force mixes, asset profiles, and deployments can then be tested in privacy.

Readiness and cost are connected because usually readiness can be improved by spending money. Details of the rate at which readiness can be bought can be derived from the elements of the proposed readiness report. Item 5 is the unit price to provide additional capacity of a facility type at a given installation. Items 1 and 2 represent the quantities authorized and provided respectively. If 1,000 units are authorized, 800 are provided, and the next group of units are available at \$20 apiece, then readiness ( $R_g$ ) is  $800/1,000$ , or 0.8, and the rate at which readiness can be purchased is  $(1/\text{unit price}) \times (1/\text{authorized quantity})$  equals  $(1/\$20) \times 1/1000 = .05$  units of readiness per thousand dollars. The purpose of the example is to show that a computational relationship exists between readiness changes and money, not to suggest a particular calculation. If another installation offered equivalent accommodations, but the cost per additional unit were \$40, the first base would be preferred both as a stationing choice and for deficit-relieving action. The stationing preference results from the assumption that the unit price of the 800th unit was roughly \$20 in one case and \$40 in the other and that units are provided in the sequence of increasing price.

The question of the factors to be considered in the unit price deserves some attention. It is proposed that costs to provide facilities be computed on an annual rate basis, in contrast to lifetime costs, primarily for the convenience of the annual budget cycle. The equitable assignment of costs to user programs would thereby be simplified. The alternative, which is not recommended, is to treat the facilities as the basis for cost accumulation. The preferred approach would be to treat costs as expenses, while the second would emphasize investments. A method of expressing investment costs in expense terms is outlined in subsection A of this appendix. Under that system the rate of investment chargeoff to the first user of a new or newly upgraded facility would be higher than for subsequent users. By considering the set of user requirements, each facility would have an occupancy charge rate and each stationing plan would imply the use of a specific set of facilities. Therefore, each

plan has a total facility cost rate that may be found by adding the rates of the individual items. Also, each plan has a set of facility readiness, one for each combination of installations and required facility types. A method is outlined below for combining this diversity of readiness indices and the cost information into a concise computational procedure. One desirable property of a stationing plan is a low total rate of facility expense, which can refer to single users, groups of users, and individual or groups of installations.

The ability to compute facility expenses allows comparison of alternate stationing plans with equal benefits to the users; however, plans where the user benefits are equal will seldom be encountered. (Equal benefits means that all the users will be given the same quantities and kinds of facilities in any of the competing plans.) A way is needed of objectively comparing plans that offer different mixes of facilities to the users. Obviously, this is a matter of judgment, and the Army's judgments in this area are proposed as the basis of the system. It is also proposed to use the readiness reports outlined earlier as expressions of the real priorities the Army uses. The likelihood that there are different sets of priorities among facility users does not prevent the system from operating. In the limit, each unit commander can set up his own priorities and change them at will when an opportunity for restationing occurs. The effect of his choices is to determine how his (hypothetical) facility budget would be divided, not how big a budget he would get.

It is recognized that calculation of the costs to provide units of various types of facility can be carried to impractical extremes. At the coarsest level of treatment, an installation's entire RPMA budget could be prorated on an area basis across all its assets. Investment chargeoffs could be a standard fraction of an average current value per unit area:

$$\text{unit cost to provide} = (\text{average RPMA cost per sq. ft.} + \text{average investment charge per sq. ft.}) \times \text{sq. ft. per facility unit}$$

Each installation would then be "offering" a given inventory of facilities at a stated schedule of costs. The obvious objection to such an approach is that unit costs vary by type of facility and other factors. An installation is free to present as detailed a schedule of tariffs as it wishes. It may not even be necessary for all installations to make the cost breakdown calculations. If only one or two installations take the trouble to distinguish among some facility types, the results could be extended over the Army. Any installation that objected to the resulting estimates could at least offer substitute values to be applied to itself. This would lead to a process of iterative refinement as follows:

A computer could take the RPMA cost for a year and the facility assets at each installation and calculate an average unit cost to provide by facility type. This could then be sent to each installation for review and adjustment. These initial estimates should make use of any existing knowledge about differentials and not be unnecessarily indiscriminate. Installations should respond on an exceptions basis, knowing that in the absence of a response the estimates sent to them are assumed to be acceptable. Higher headquarters would then use the best available figures in preliminary stationing, construction, and budgeting analyses. The door would always be open for refinement, with the computer doing all the bookkeeping and routine adjustments.



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## GLOSSARY

AAI	Army Analysis of Intelligence
AFDP	Army Force Development Plan
AIF	Army Industrial Fund
AOB	Approved Operating Budget
AMS	Army Management Structure
ASOP	Army Strategic Objectives Plan
AWP	Annual Work Plan
BASE	Basic Army Strategic Estimate
BEMAR	Backlog of Essential Maintenance & Repair
BER	Budget Execution Review
BP	Budget Program
	BP 1700,1800,1900      Defense Family Housing
	BP 2000      Operating Forces Activities
	BP 2200      Supply Activities and Associated Services
	BP 2300      Depot Material Maintenance & Support
	BP 2400      Medical Activities
	BP 2500      Command and Administrative Support
	BP 2800      Intelligence Activities
	BP 2900      Army Communication Services
	BP 4000      PEMA
	BP 6100      Military Construction
	BP 9000      Base Operations Activities
BPA	Budget Project Accounts
BY	Budget Year
CAUO	Command Analysis of Utilities Operation
CBE	Command Budget Estimate
COA	Comptroller of the Army
COB	Command Operating Budget
CRRC	Construction Requirements Review Committee
DCS	Deputy Chief of Staff (level)
DCP	Development Concept Paper
DFE	Division Force Equivalent
DGM	Defense Guidance Memorandum

DPM	Draft Presidential Memorandum
FAS	Force Accounting System
FC&CCC	Facility Classes & Construction Categories Code
FHMA	Family Housing Management Account
FYDP	Five-Year Defense Program
IRCP	Intermediate Range Construction Program
JIEP	Joint Intelligence Estimate for Planning
JLRSS	Joint Long Range Strategic Study
JSOP	Joint Strategic Objectives Plan
JSPS	Joint Strategic Planning System
LRCP	Long Range Construction Program
LRWP	Long Range Work Plan
MCA	Military Construction - Army
MFOI	Major Force-Oriented Issues
MORP	Maintenance & Operation of Real Property
MPA	Military Personnel - Army
MRPF	Maintenance of Real Property Facilities
OA	Operations - Army
OCE	Office of the Chief of Engineers
ODAB	Office of the Director of the Army Budget
OMA	Operation & Maintenance - Army
ORMO	Operating Resources Management Office
PBAC	Program Budget Advisory Committee
PBD	Program Budget Decision
PBG	Program Budget Guidance
PCD	Program Change Decision
PCM	Planning Control Memorandum
PCR	Program Change Request
PEMA	Procurement of Equipment & Missiles - Army
PRIMAR	Program to Improve Management of Army Resources
PYR	Prior Year Review
RMS	Resource Management System (DOD)
RPMA	Real Property Maintenance Activities
SACS	(force) Structure and Composition System

SRCP      Short Range Construction Program  
TAABS      The Automated Army Budget System  
TAADS      The Army Authorization Document System  
TDR      Technical Data Report  
  
9050      Operation of Utilities  
9060      Maintenance of Real Property  
9070      Minor Construction  
9080      Other Engineering Support

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This report is a continuation of the Integrated Facilities System (IFS) Phase IIA executive decision survey task. (see report R-1209, Vol VIII, Annex A, "Executive Decision Survey"). This current analysis identifies specific facility data use identifiers currently required by the Army and OSD. Three major work areas: information gathering, compilation and analysis of information, and development of analytical procedures led to the accomplishment of the two major activities associated with this task: refinement of Phase IIA Executive Decision Survey Analysis, and the development of analytical procedures. As a result of this analysis, duplications or voids in facilities management information at the Chief of Staff, Secretariat, and Office of the Secretary of Defense levels were identified and a selection was made of those that are recommended for inclusion in the IFS data base. (U)			
14. KEY WORDS			
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Decision Making	Management Engineering		
Facilities	Management Planning		
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Logistics Planning	Real Property		

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